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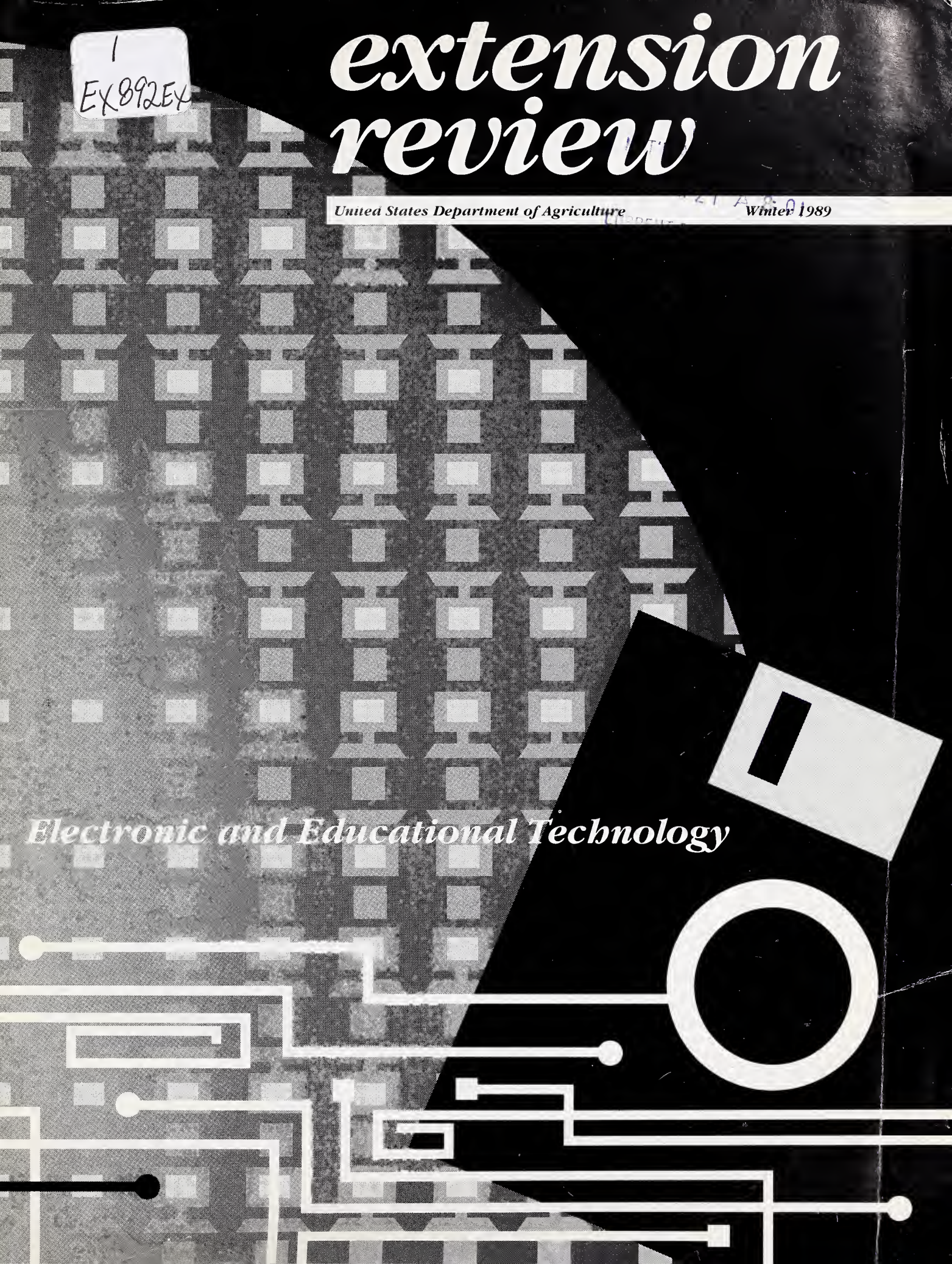
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extension review

United States Department of Agriculture

Winter 1989

Electronic and Educational Technology



Risk Taking On The Road To Success



Myron D. Johnsrud
Administrator,
Extension Service,
USDA

Nothing ventured. . . nothing gained.

Fortune favors the bold but abandons the timid.

They are able because they think they are able.

Nearly all ages and cultures have framed sayings and admonitions to encourage risk taking, courageous action, and innovation.

And yet in the next breath these same ages and cultures have seemed to counsel against it.

Better safe, than sorry.

Tried and true.

Or more humorously framed by Mark Twain: *Put all your eggs in one basket and watch that basket!*

Risk taking is essential to dealing with uncertainty. And yet just stating that fact creates tension and anxiety in the many who are more comfortable with the fantasy of a certain world...a world that behaves within *our* control and predictions.

Certainty/uncertainty tug-and-pull can hold us in a grip that may blind and paralyze us. I've long been fascinated with the idea that by improving our risk taking ability we can create an improved tomorrow and also be free to enjoy more intensely the road to the future.

Robert Lewis Stevenson once wrote that, *Success is not a destination. It is a journey. To travel, hopefully, is a better thing than to arrive.*

It is in this spirit that I would challenge each of you today to become a more proficient risk taker...in your personal, professional, and organizational lives.

Some have described risk taking as deciding to embark on a *reasonable* adventure. I would like to emphasize the notion of reasonable. For Greg Louganis, the US Olympic star, to risk the high dive, even after injury, may be reasonable—but for many of us trying such a feat with or without injury would be foolish. No, I'm *not* talking about foolish risks—I'm talking about being courageous enough to engage in the exciting adventure of living. To be bold enough to go on even if you can't see around the curves of life, even if you can't see everything ahead.

Irony Of Avoiding Risk

It is ironic that sitting and watching eggs in one basket may be *more* risky than moving forward on the fully uncharted course. The history books are filled with lessons of what happens when people, organizations, and nations wear blinders to the

forces of coming change. When people and groups are afraid to take risks, are afraid to fail, and afraid to lose their existing identity, money, power, and possessions, they are usually more prone to failure.

Take the Dutch of the 17th Century. They were the vigorous economic and social innovators of the time. But within only a hundred years they were overtaken by the English. Why? Because a risk avoidant, fearful attitude settled over Holland. Those who had accumulated fortunes in the years of prosperity attended exclusively to keeping them. Politics turned ugly. Public spirit disintegrated. The Dutch became slow to adopt new advances in shipbuilding, weaving, fishing, mapmaking, and navigation. They clung to the established order, threatened by new ways of doing things. They refused to risk rearranging the safety of the present and thus missed the chance to have the talents, skills, and organizational arrangements on line when these were needed.

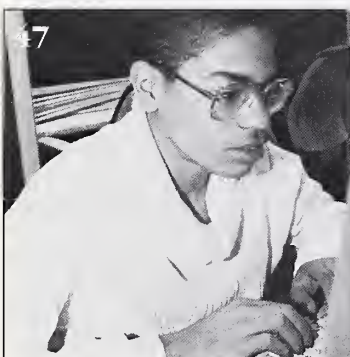
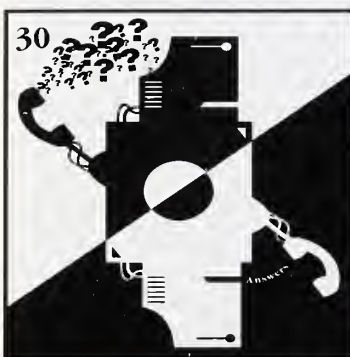
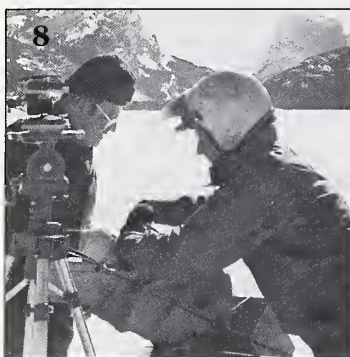
Many skilled observers of the U.S. organizational and economic scene fear we may also be taking the risk avoidant path of the 17th Century Dutch. Bestselling author and organizational researcher, Tom Peters, warns us that predictability is a thing of the past and all safe bets are off. In *Thriving On Chaos* he seems to have gone beyond his earlier *Search For Excellence* by declaring there are no excellent companies. He proposes revising the old saying, *If it ain't broke, don't fix it ...to, If it ain't broke, you just haven't looked hard enough. Fix it anyway.*

Flexibility, action, and risky innovation are among his prescriptions for coping in a world turned upside down. He says we must all learn to *love* change as much as we've hated it in the past.

Let me quote his views in *Thriving On Chaos*: "Every variable is up for grabs ... we are meeting the challenge with inflexible factories, inflexible systems, inflexible front-line people—and worst of all, inflexible managers who still yearn for a bygone era where presiding over the opening of a new plant was the most strenuous chore to be performed. Today, loving change, tumult, even chaos is a prerequisite for *survival*, let alone *success*."

He argues that we must stop organizing for stability...that only organizations structured for change will survive. That managers must take much greater risks...get better at seeing the whole picture...listen, listen, listen...trust people to innovate and insist on absolute integrity.

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Janet K. Poley
Director
Communication,
Information, and
Technology

Patricia Calvert
Editor

James Wolfe
Managing Editor

Judith Armstrong Bowers
Consulting Editor

Joyce J. Calvaruso
Information Assistant

Vincent Hughes
Design Director

Victor Newman
Designer

Carolyn Evans
Composition

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Secretary of
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Orville G. Bentley
Assistant Secretary for
Science and Education

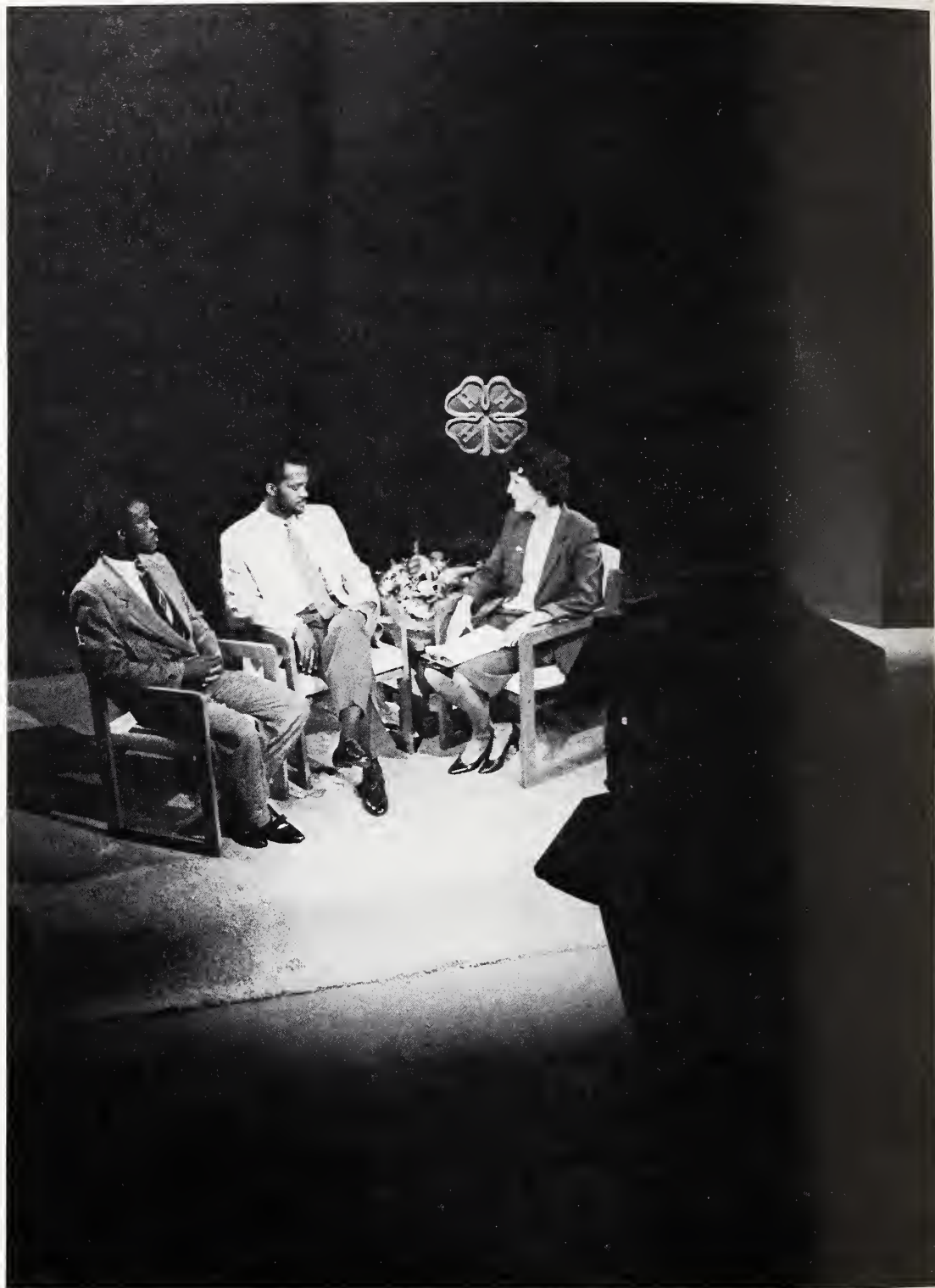
Myron D. Johnsrud
Administrator
Extension Service

Video Teleconferencing— Its Time Has Come

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William F. Murphy
*Extension Satellite
Programming
Coordinator,
Virginia Tech,
Blacksburg*

To encourage adult volunteers to attend the state 4-H Congress, Extension at Virginia Tech, Blacksburg, beams a video teleconference to 54 Virginia downlink sites. Engaging in a live panel discussion on the satellite broadcast are (left to right): Lynwood Christian, president, 4-H state cabinet; Frederick Custis, county Extension agent; and Irene Leech, state 4-H and Youth Development specialist.



When Virginia Tech installed its satellite broadcasting facility, the purpose was to transmit 35 hours of graduate engineering classes each week. The Virginia Cooperative Extension Service (VCES) quickly realized the potential of

the technology for Extension education, and now VCES is the system's second largest user, broadcasting from the television studio or one of two electronic classrooms.

Extension has installed 54 downlink sites throughout the state. Four are in district offices, four are in 4-H Continuing Education Centers, three are in research stations, and 43 are in local Extension offices.

Establishing Downlinks

In choosing the downlink sites, Extension considered not only geographic location, but also several other factors. They wanted each facility to have classroom space to accommodate 15 to 25 people; be controlled by the local Extension office or easily accessible to Extension; have a classroom located within 100 feet of the satellite dish; have a telephone in the room or nearby; and be approved by the Extension district.

Each site received a 25-inch color monitor, a monitor stand, and a VCR. The cost of establishing the downlink sites (including both installation and equipment) varied from \$2,600 to \$3,800, depending on the engineering requirements at each location.

Varied Audiences

Twenty-nine video teleconferences were produced in the first 15 months of operation, and 24 more are being developed in the current fiscal year. Programs so far have included, for example:

- Thirteen marketing updates that followed release of major USDA crop and livestock reports;

- A broadcast for Extension homemakers on the national Family Community Leadership project;

- A session to prepare adult volunteers to attend the state 4-H Congress; and

- A program explaining the new Immigration Reform and Control Act to clients who employ migrant labor, with 4 hours of followup programming on labor laws for farmers.

The most unusual satellite system broadcasts were two live feeder-cattle "tele-auctions." Conducted by VCES in cooperation with the State Department of Agriculture and Consumer Services, the cattle

sale was underwritten by the Virginia Cattlemen's Association. This marketing effort attracted buyers from all over the Midwest, exposing them to the high quality of cattle raised in Virginia. Virginia producers found new buyers for their cattle and earned excellent prices. Two more such sales are planned.

A Cost-Effective Method

The cost effectiveness of satellite technology was demonstrated by two broadcasts on pesticide training and recertification. At 36 sites around the state, 576 clients were recertified for their pesticide applicator's license.

The participants were able to call in their questions "live" to on-air experts. Extension agents accompanied the broadcasts with their own "wrap-around" educational sessions on local pesticide issues. Tapes of the broadcast were made available for further use.

Production costs for 4 hours of training, including the cost of the uplink and satellite time, were \$3,845. Travel costs alone would have amounted to an estimated \$4,320 if specialists had conducted the meetings in person; the difference becomes far more significant when salary costs and time savings are considered.

Learning From Experience

VCES is finding that video teleconferencing works well when directed to small, geographically dispersed audiences. Live interaction is not always necessary. The system is being used increasingly within Extension for staff development and organizational communications.

It has become clear that video teleconferencing must be part of a much larger educational effort. On-site agents must have a clearly defined role, and the program must be supported by printed materials and visual aids. Broadcasts that stand alone will always have a role, but the real value in using this system for "distance learning" is to make it

part of a series of learning experiences, such as mini-courses and other types of continuing education programs.

Some Surprises

The VCES experience with satellite technology has led to two surprising developments. First, secondary usage of tapes of the broadcasts is very high. This indicates that "live" programming is not always at a time or place convenient to both staff and clients, and it also reflects the popularity of viewing videotapes in the home.

The second surprise has been the interest of other groups—such as lawyers, pharmacists, health professionals, the FBI, and volunteer fire departments—in using the Extension downlinks to receive programming. Having this capability has enhanced the community visibility of Extension throughout the state, as well as its image as a progressive organization.

National Programming

A local Extension office with a satellite downlink can receive not only its own state's programming, but also programs that originate in other locations. The growing demand for quality satellite programming is spurring efforts toward national coordination. The DIALCOM system, for example, provides information on satellite broadcasts in its SATCAL program. RFD-TV is a satellite broadcasting network devoted to 24-hour farm programming.

The interest and the demand are there, and the technology is in place. Extension must take advantage of the situation in order to move its educational programming effectively into the 21st century. ▲

The County Office Of Tomorrow

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James Summers
Extension Director,
Office of Evaluation
Studies,
and
William McFarland
Extension Director,
Extension Technology
And Computing Services,
University of Missouri,
Columbia
and
Don R. Day
Extension County
Program Director,
Boone County
Extension Office,
Columbia, Missouri



Extension's continued success depends on its effective adoption of new technologies. Recognizing this fact, Missouri Extension has set up one of its county Extension centers as a "Model County Office"—a test-demonstration site for new and emerging technologies.

With financial support from the university, the county commission, and the private sector, the Boone County Extension Center in mid-Missouri is the model test site for computer hardware and software, video technology, and satellite equipment.

The model office is helping Extension to do the following:

- . Determine which technologies can best enhance Extension's educational programs;
- . Learn what technical modifications are necessary;
- . Assess staff acceptance of the new technology;
- . Determine training requirements;

. Discover how much time is needed to implement the new technologies and integrate them into regular programs; and

- . Study client reactions and acceptance.

Experimental Technologies

The Boone County Extension staff is testing the following technologies:

. *Local Area Computer Network (LAN)*—By linking the computers of 12 specialists and their secretaries, the LAN helps the staff communicate effectively. The system uses an IBM PS/2 Model 60 as a dedicated file server; each staff member's individual work station is equipped with an IBM Model 30. A Hewlett Packard Laserjet Series II serves as a network printer.

. *Graphics Work Station*—The network includes a graphics work station provided by a second IBM PS/2 Model 60 with a Hewlett Packard 7550A color plotter and a Hewlett Packard Scanjet. This graphics work station has significantly improved

the quality of the visuals used in educational presentations and desktop publishing.

. *Desktop Publishing*—Use of PageMaker software with the graphics work station equipment and the laser printer provides desktop publishing at near-offset quality.

. *Remote Access*—An IBM-compatible computer, connected to the network, is used exclusively to provide staff members with access to the network from any remote location.

. *Software Testing*—Commercial software in the system includes network versions of Lotus 1-2-3, WordPerfect, and Revelation, together with network access to Chartmaster, Signmaster, Overhead Express, Atlas, and Page-Maker. Also available are application software packages developed to assist in delivery of specific programs.

. *Portable Computing*—Two Zenith Model 181 laptop computers make powerful comput-

ing in the feedlot or on the fairgrounds a reality. The laptop computers are accompanied by two battery-powered Hewlett Packard Thinkjet printers. A Kodak Datashow allows the screen images from these portable computers to be projected onto a standard audiovisual screen for viewing by larger groups.

Satellite Downlink—To establish the Boone County Extension Center as a satellite receiving facility, the Boone Electric Cooperative donated a Chaparral Sierra II satellite receiver/controller and motorized 9-foot mesh dish. The dish receives signals from approximately 24 satellites. The Center has received satellite programs produced by Oklahoma State, Ohio State, Iowa State, and the National University Teleconference Network.

Interactive Video Disk—The Center's interactive video disk station consists of an inexpensive laserdisk player connected to an IBM PC serial port. Programs available so far include a tutorial on identifying and preparing meat cuts and a module on insect identification. These demonstrations, available in the county office, have been taken to shows, fairs, and shopping malls.

Two-Way Radio Communications—Throughout Missouri, Extension uses a two-way radio system for communication between offices and specialists' automobiles. The county office base radio can be operated using the office telephone system. This provides specialists with convenient access to the central radio from their desks.

CD-ROM—The CD-ROM player which is being added to the system will provide access to large databases stored on removable compact disks. A single disk can hold 550 megabytes (roughly 250,000 pages of text). The data will be accessible from any of the LAN stations and from the field through the remote access computer.



Preliminary Conclusions

Boone County staff members have raised their technical skill level through the training they have received and through their experience in using the hardware and software. Their motivation for learning has increased. Staff members are anxious to explore new opportunities for expanding the use of the equipment to enhance delivery of educational programs to Extension audiences.

The personnel in the county office need advanced training to more fully utilize the capabilities of the hardware and software. Specialized software is needed in order to further integrate the existing technology into program delivery. There is a continuing need to provide introductory training to new staff members. ▲

Opposite: At the Boone County Extension Center, Missouri, Extension specialists share expensive hardware and software. Here, Kay Hargis, secretary at the Center, designs a publication cover for a conservation field day. Dan Cotton, specialist, Extension Technology and Computing Services, advises her on the PageMaker computer program. This page: Don R. Day, Extension county program director and agricultural engineering specialist, displays the Zenith laptop computer he used to help design a syphon flush-tank system. The system was installed in a swine finishing building for Jim Abolt, a Glasgow, Missouri hog farmer.

Photographs courtesy of Jim Shaner, Extension information specialist, University of Missouri, Columbia.

Video Technology— Innovative Uses In Wyoming

8 *Extension Review*



Jan Scholl
*Former Extension 4-H
Specialist,
Home Economics,
and
Randy L. Anderson*
*Extension Media
Specialist,
University of Wyoming,
Laramie*

Reaching the scattered population of Wyoming with educational programs is a challenge in such a vast state. Use of video technology has increased the effectiveness of educational efforts in many communities.

In the 2 years since the state Extension office and the 26 county Extension offices were equipped with camcorders, VCR's, and television monitors, videotapes have been used to

document events, teach skills, and evaluate performance in some very innovative ways.

Agricultural specialists and agents use videos as a measurement tool to check test plots and as a report for on-site weed, insect, and range problems to agricultural groups in addition to funding bodies. Marketing agricultural products takes on a new meaning when native hay,

alfalfa, and cattle can be shown to buyers in other parts of the country and the world.

4-H Video Planned

4-H grants from Fleischmann's Yeast and Kodak have helped develop award-winning videos about food service careers and breadmaking. 4-H members and leaders wrote the scripts, performed the roles, and consulted with experts to produce these educational aids. Efforts are now underway to design a 4-H project video.

On the state level, only 4-H professional staff member need attend each district leader's meeting since new programs and educational methods can be introduced by video. Special inserts are made of project materials and on-site locations. Because the tapes are multidisciplinary, leaders also begin to recognize those responsible for their programs of interest.

In the home economics area, the EFNEP program has produced a series of 15-minute video segments to show how to make the best use of the food dollar nutritionally. Called, CENTSIBLE NUTRITION, the videos cover these topics: supermarket persuasion; fruits and vegetables; meats; legumes; eggs, milk, and cheese; and grains.

In these videos, computer graphics and special effects help explain such difficult educational concepts as food marketing, the effect of atmospheric pressure on high-altitude cooking, and how to use a variety of incomplete protein sources in diet. Guest appearances by nutrition experts clarify the major points, and a university Extension agent guides the viewer from one topic to another.

Enhancing home-based business efforts is the goal of Wyoming's Home-Based Business Program coordinator. Showing others how to operate a successful bed-and-breakfast establishment is just one of the ways videotape is used to achieve this goal.

Sharing Program Ideas

Extension administration benefits from the ability to tape county programs, review meetings, and analyze clientele input. Videos of activities,

demonstrations, speeches, and teleconferences generate interest and provide agent training. They are a means of sharing program ideas with business, community groups, and other agencies.

Videotapes also serve as excellent feedback devices for professional presentations. At meetings and on television, videos are a means of marketing Extension and keeping the public informed of their educational opportunities. Candidates being interviewed have been videotaped, and those tapes used to make staffing decisions.

Videos have also served as program supplements for many Wyoming programs. "Our kids come so far into town...having a video or other educational activity helps 4-H members extend their learning experiences," says Denise Smith, university Extension agent from Niobrara County. Denise shows commercial and Extension - developed videos at her county meetings and encourages leaders who may have missed an important meeting to update themselves by viewing a previously recorded tape in the office or at home. It is now estimated that one-third of the families in Wyoming have VCR at home.

Multiple Uses

Videos also "stretch and make multiple use of our resources," according to Darryld Kautzmann, east district director. They are often combined with a skill-a-thon or program package in which all the equipment to carry on an activity is provided. Videos extend Master Gardener training programs and find their way to national meetings, classrooms, fairs, exhibit booths, and television.

Videotape and associated video technology make other forms of educational media more convenient to use, particularly when old films and multimedia slide sets are dubbed onto the new format. Titles, graphics, photographs, slides, and motion picture footage are often recorded along with "live action" on videotape. Only selected parts of the tape may need to be shown for a specific educational purpose and videos can be stopped and rerun on regular or slow-action speeds for detail, skill reinforcement, and retention.

The presence of video technology in Wyoming has allowed many university Extension agents and specialists to develop further their media skills. After receiving initial training on video operations and usage, many university Extension agents train volunteers in video techniques and uses. Often, these leaders have trained teens who then use videos for junior leader activities and their own special interest projects.

Previewing At Home

Professional staff with personal VCR's often find previewing videos easier at home, while relaxing or doing household chores. Many professional staff members have taped educational programs on television during the day for their own enjoyment and education at home.

Videos let Wyoming citizens learn on their own schedule. They have provided professional Extension staff a means to reach a larger audience with additional avenues of training. But most of all, video technology has proven versatile as a tool to extend information to a small and scattered population within the state's 98,000 square miles. ▲

Sid Chopping, University of Wyoming, College of Agriculture, left, sets up his video camera at Green River Lakes, Wyoming, assisted by Dave Hobl of the U.S. Forest Service. The video they are preparing to film promotes the Wyoming Continental Divide Snowmobile Trail.

Photograph courtesy of Diane Essington, the Pinedale Roundup, Pinedale, Wyoming.

Classroom TV Comes Alive!

10 Extension Review



Larry R. Whiting
Head,
Information and
Applied
Communications,
The Ohio State
University, Columbus

Watching a professor clean a beehive on television and understanding what he's doing is no big deal. But if that instructor asks if you understand what is being done and you can not only see but hear your reaction instantly—that's something new!

That new experience is happening for Ohio State University College of Agriculture students and faculty, since the installation in April 1986 of an instructional television system that allows live audio and visual interaction between the college's Columbus and Wooster campuses.

Students in Columbus can be taught by faculty at Wooster or vice versa. Students or several faculty members can participate at both locations—depending on specific needs of the class.

In fall 1986, James Knight, professor of agricultural education, used the television link for the first time. He taught Ag Ed 790, a graduate course about creating better learning environments for students. Enrollees were 22 teachers from elementary and secondary schools—11 in Wooster and 11 in Columbus.

"The students participating at Wooster probably would not have had a chance to take this course without this television system," Knight explains. "Both teacher and students were apprehensive about television at first, but after two or three weeks our being on television was secondary."

"We all became comfortable with the technique and with each other," Knight says. He contends that teaching by television helped him improve his teaching methods. Some of the classes were taped and self-critiqued.

Sight And Sound Interaction

"This experience was not at all like television teaching of the past," Knight explains. "The possibility of immediate response, total sight and sound interaction, enhanced the procedure."

Some student reactions included: "There is excellent camera work and visual quality and good sound during the discussion sessions. It is human and interactive."

"I would rather be in a conventional setting, but this system makes it possible for those of us in the Wooster area to take classes."

"I am enjoying this experience. At first the idea of a television course sounded boring, but this is not the same at all."

Students were asked: "Would you take a course again using this system?" All students in Ag Ed 790 said, "Yes." Two said, "Absolutely."

Linking Campuses

The idea to link the two campuses in this way had long been the dream of Kenneth Reisch, associate dean, and Harold Bauman, assistant dean and business manager, both of the College of Agriculture. Ohio Agricultural Research and Development Center (OARDC), Wooster faculty needed more classroom teaching opportunities. Traveling 90 miles to Columbus one, two, or three times each week to teach students essentially cost an entire workday plus travel and meal expenses of \$40 to \$60 per trip.

Two almost identically equipped classroom-studios are located in 244 Kottman Hall on the Columbus campus and 121 Fisher Auditorium at the OARDC campus in Wooster. Each classroom has three broadcast-quality cameras which can be operated by one person from a control room at the rear of each facility. One camera is mounted on the wall in the front of the room and another at the back. An overhead camera is fixed to a portable cart and is used with visuals such as overhead transparencies or printed matter. The cart also houses a VCR which permits the instructor to play videotapes.

The classrooms are electronically connected by a microwave signal between Columbus and Wooster via the Ohio Educational Broadcasting Network (OEBN). This state agency is located on North Star Road in Columbus and is the program distribution service for the public broadcasting stations in Ohio. A microwave transmitter on the roof of Kottman Hall sends the signal on its way over the OEBN network. At Wooster, a fiber optics cable carries the signal from a state-owned microwave tower near OARDC to Fisher Auditorium.



Funding

The system and installation cost approximately \$250,000 and was funded by the College of Agriculture and OARDC. The Ohio Cooperative Extension Service purchased a video editing system and some additional accessory equipment for the control room in Columbus. Extension and OARDC are funding three television technicians to operate the system as well as to produce other video materials needed for teaching, research, and Extension.

The television system operates up to 15 hours each week, generally from 8-9 a.m. and 3-5 p.m. In September 1986, OEBN installed a half-million-dollar satellite uplink transmitter. The uplink also benefits the College of Agriculture, because the Ohio Cooperative Extension Service plans to eventually teach via satellite to its five district and many of its 88 county offices. In 1987, satellite receiving dishes were installed in the district offices and satellite teleconferences were conducted.

Links Departmental Meetings

In addition to classroom teaching, the television link is used for departmental meetings and seminars. Research faculty members in the Department of Agronomy located in Wooster, for example, do not need to drive to Columbus for a departmental meeting. Furthermore, the College of Agriculture has had several faculty meetings with the television link saving travel time and costs for several dozen faculty members. In fact, the first use of the link was a faculty meeting which featured Fred Hutchinson, Vice President for Agriculture and Dean of the College of Agriculture, and Edward Jennings, OSU President.

Besides live television classroom teaching, each facility can be used as a production studio for taping and editing educational presentations for

Opposite: An instructional television system now links the Columbus and Wooster campuses at The Ohio State University College of Agriculture. The facility is converted to a typical studio set when it is time for live satellite television. Here, one of three live satellite programs is under way during last summer's emergency drought crisis. This page: "Agri-Trends" is one of Ohio's more popular satellite programs and is used by several public broadcasting and many cable systems throughout the Nation.



View from the control room depicts studio/classroom during two-way video class.

later classroom use or other teaching such as the educational programs conducted by the Ohio Cooperative Extension Service. The facilities can also be used by students or faculty who want to improve their speaking and presentational skills. Many do that by watching themselves on tape. These same classroom studios are the originating studios for satellite teleconferencing programs.

Input From Graphic Artists

How does OSU counter dull television teaching? Instructors are encouraged to meet with graphic artists of the Information and Applied Communications Staff in advance to make sure visual instructional materials such as slides, overhead transparencies, and videotapes are in a good television format. Conversation and discussion among students at both locations also are encouraged so neither group feels isolated by the 90 miles. Panel discussions and oral reports by students enhance the effectiveness of the classes. Those instructors who rely solely on the lecture method and blackboard notes are not fully using the capability of the system.

Television tends to accentuate both good and bad teaching methods. Excellent instructional skills generally look even better on television but the not-so-good techniques look even worse. Full-color

graphics designed for use on television, and live interaction between Wooster and Columbus students help television teaching immensely.

Faculty, staff, and students in agriculture welcome the challenge television instruction brings. The increased use of relatively inexpensive home video recorders, the use of satellite transmission, which now costs under \$1,000 per hour, and society's growing interest in electronic audiovisual media may mean television will become a major communications tool for agricultural programs at The Ohio State University. ▲

Extracted and updated from Ohio 21, Vol. 1, issue 1, March 1987, published semiannually by the College of Agriculture, the Ohio Agricultural Research and Development Center, and the Ohio Cooperative Extension Service of the Ohio State University.

Crops Need Irrigation? Consult Your Weather Station!

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This summer southeast Missouri growers received weather information critical to the efficient scheduling of irrigation from weather stations established by Extension specialists at the University of Missouri.

This is only the beginning, reports Van Ayers, Extension agricultural engineering specialist at Delta Center, Portageville. "We set up a weather station at the Delta Center that recorded soil and air temperature, wind speed, solar radiation, and relative humidity. Now there are plans to establish three more computerized stations next year at Cape Girardeau, Poplar Bluff, and Charleston, he says.

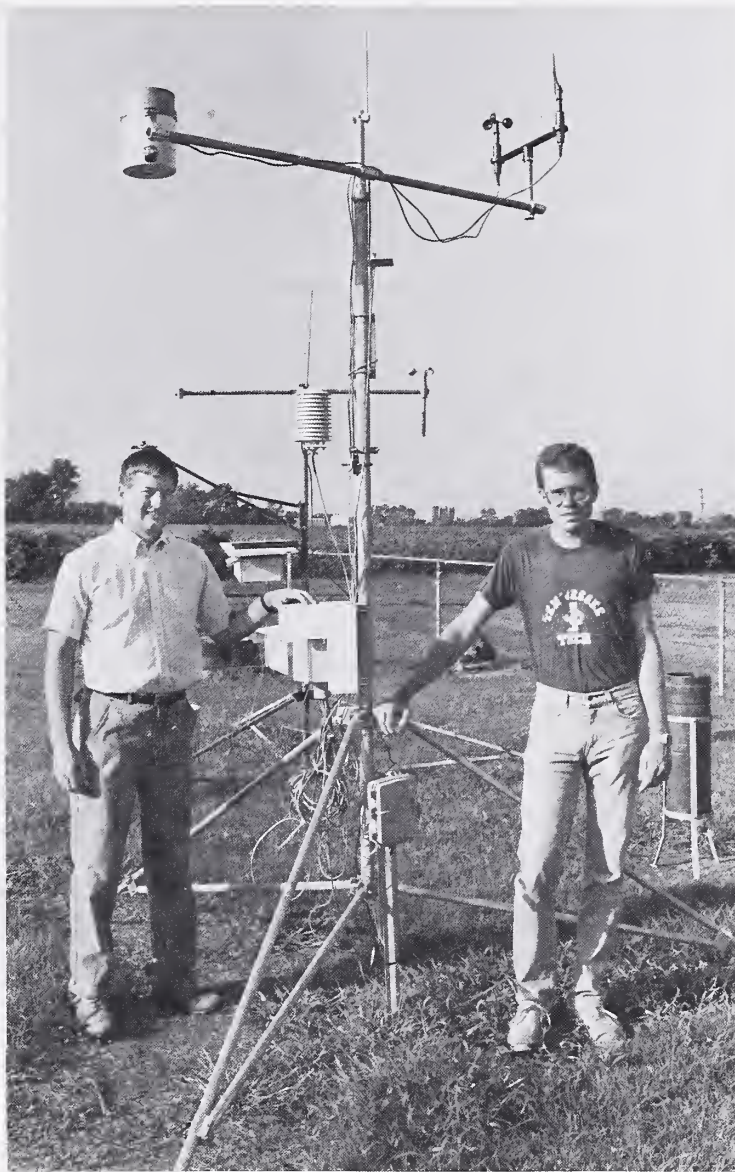
From the middle of June to the middle of August, weather information was sent to a weekly and two daily newspapers and five radio stations. "We'll start earlier next year," Ayers says, "probably in mid-May."

Computer Calls

Steve Honeycutt, a University of Missouri graduate student, calls up the weather stations on a computer and runs the data through a series of equations. "Doing this," Honeycutt says, "gives us information on evapotranspiration—water use—for corn, cotton, soybeans, and grain sorghum.

"We can tell farmers the amount of water each crop has used since it emerged and predict how much more water plants will need to keep from suffering stress," he points out. "With this information farmers know how much irrigation water to apply to make up for lack of rainfall."

A \$38,000 grant from the Missouri Department of Natural Resources' Division of Energy provided the money to buy the weather stations and for personnel to implement the program.



"The information we can gather through these weather stations is critical to effective economical irrigation," Ayers believes. "We'll spend this winter telling growers how to use the weather data we can provide. They will have to take their soil types into consideration and keep careful track of the rainfall at several locations on their own farms.

"Our aim," Ayers concludes, "is to obtain the most efficient use of the energy dollars spent by irrigators in operating their

systems. This will ensure the crops on these farms do not suffer any stress from lack of moisture." ▲

Extracted from an article in Exclaimer, Vol. 16, No. 5, October 1988, a University Extension publication, published by University Relations at the University of Missouri, Columbia.

Joseph J. Marks
Extension News
Director,
Extension Information,
University of Missouri,
Columbia

Van Ayers (left), Delta Center agricultural engineering specialist, and Steve Honeycutt, a University of Missouri, Columbia graduate student, set up a weather station in Portageville to gather information critical to effective and economical irrigation.

*Photograph courtesy of Duane Dailey, **Exclaimer**, a publication of the University of Missouri, Lincoln.*

On The Road—With Technology

14 Extension Review



B. K. Lilja
*Extension Public
Information Editor,
Fort Valley State College,
Fort Valley, Georgia*

Sometimes the mountain can come to Mohammed! That was the idea last fall when the Fort Valley State College (FVSC) Cooperative Extension Program unveiled its 45-foot mobile teaching unit.

The customized trailer has visited small Georgia towns, showing community leaders new educational technology.

The three-compartment trailer is financed by W.K. Kellogg Foundation grants. The Track III New Educational Delivery Systems Mobile Teaching Unit for Adult Learners houses computers, a satellite receiving system, and audiovisual equipment. Extension wants the unit to promote an awareness of teaching technology, FVSC Extension Education Specialist Mercedes Parker says. "Computers, video equipment, satellite programming, interactive video—all of the technology that can bring a community information."

In the front compartment, visitors can work with the satellite system, a video cassette recorder, two laser disk systems, a slide-tape projector, and an audio cassette recorder.

The trailer's middle and rear sections house six computers: four IBM Personal System 30s, an Apple II-GS, and an IBM PC Convertible.

Rural Focus

"Over 300 people in six counties have visited the unit since I took it on the road," says Parker. "The self-powered trailer is part of an FVSC Extension effort to provide rural communities with modern educational tools."

Recent history has excluded small towns from education's mainstream, Parker explains. Facing hard financial times, many have settled for less than the best ways to educate their citizens.

The Extension specialist says the one-of-a-kind unit was designed to meet several objectives. "It puts new technology in town settings, so that no matter what the future brings, community

leaders will be familiar with technology and its basic applications," she says. "It helps them move from the print age to the video and microprocessor era."

The unit, she points out, is also expected to meet the needs of community educators competing with sophisticated technology and communities unable to support their own modern education programs.

Parker calls it "a learning center for community leaders" because the equipment does most of the teaching. "Leaders," she explains, "include Extension agents, librarians, health officials, vocational teachers, adult tutors, the clergy, and others who provide adults with some form of knowledge, skill, or service."

Hands-On Learning

"I'm there to instruct visitors on how to use the equipment," she quips. "The systems actually interact with their users to create the learning situations. Once they've started, people teach themselves how to use the technology."

While visitors look everything over, she says, the computers and their programs attract most of the attention. Those who want to learn computer basics "hands-on" can work with an interactive video or Apple II-GS program, she comments.

"Our graphics system teaches a user how to draw with a computer," she says. "It shows how to create charts, landscapes, drawings, and graphs."

The word processing program teaches how to use a computer to prepare and edit manuscripts, letters, memos, and forms. The Desktop Publisher teaches how to design and lay out newsletters, bulletins, brochures, posters, flyers, and newspapers.



A CD-ROM (Compact Disk-Read Only Memory) system teaches users about the new compact disk technology and its applications. An IBM PC Convertible and a LAPLINK database expose visitors to lap-top technology, where they can take a computer out in the field.

Parker says the unit's selection of database programs expose users to everything from bookkeeping to problem-solving by computer.

Other Technology

While the computers are popular, it doesn't mean the rest of the trailer's technology sits idle.

The satellite receiving system allows users to view educational programming from universities and colleges across the Nation. Audiovisual equipment demonstrates how even modestly priced technology augments and complements educational programs.

Parker says public response has been good. "People usually aren't prepared for what's inside the trailer," she says. "But, once

they're over their initial reaction, they quickly turn to whatever technology they want to study."

Sandra Williams, Crawford County Cooperative Extension director, rated the unit excellent. "It provides an opportunity for people in rural areas like ours to learn what is available, how to operate computers and specific programs, as well as ways that they can better do their work through the use of computers," Williams notes.

She voices her only complaint when she adds, "I would suggest a 6-week county visit instead of 4 weeks, if possible."

Annette Lucear, director of the Community Improvement Coalition of Monroe County, Inc., comments: "My co-worker, Cynthia, and I received 24 hours basic training that we will use in the near future as we change our office records over to computer."

Future Direction

The unit's future? Parker says its possibilities are expanding. While continuing to educate community leaders in middle Georgia, she says, the unit can also familiarize small businesses with the uses of modern technology.

A number of small businesses in the counties she's visited have told her they're interested in seeing the unit set up at their facilities.

"It has an impact on people," Parker says. "By making new—and sometimes threatening—technology familiar, we open people's eyes to possibilities."

Whatever comes, she adds, every community—large and small, urban and rural—has a future filled with new technology.

As long as Extension technology is on the road, community leaders in Georgia will have a chance to learn and include technology in their future plans. ▲

Opposite: Parked in a farmer's market, the exterior of the Mobile Teaching Unit from Fort Valley State College, Georgia, gives little indication of the high-tech educational equipment housed inside. This page: Janet Rodekobr, Extension news editor, The University of Georgia, tries her hand at the computer graphics program while doing a story on the mobile unit.

The Magical World Of Computer Graphics

16 Extension Review



Barbara Rixstine
Extension
Project Assistant,
Department of
Agricultural
Communications,
University of Nebraska,
Lincoln

In 1900, author L. Frank Baum dreamed up an effervescent "horse of a different color" for his imaginative classic, *The Wonderful Wizard of Oz*. Less than a century later, computer graphics technology enables artists to create—on screen, of course—a "horse of a different color" in a matter of minutes.

In fact, they can make 12 horses from one, change their sizes, and even adorn them with bells and whistles, if a client so desires. And it all comes at the push of a button—well, maybe a few buttons—and the results are getting some very positive attention.

Clients Are Enthusiastic

Extension administrators and specialists at the University of Nebraska, Lincoln campus, are enthusiastic about the high-quality visual presentations that have been made possible by the computer graphics capability of the Department of Agricultural Communications.

"We've used computer graphics extensively for talks and slide-tape programs," says Alice Jones, Extension agronomist, "and have found that they enhance the effective transfer of research-based soil information to producers. The high-quality slides do a better job of helping the audience visualize changes in the soil's physical environment as a result of farming practices. In fact, farmers are making changes in their farming practices based on this information."

Multi-Level Services

Agricultural Communications offers two levels of computer graphics service. The low-end service, using a software package called Lotus Freelance, allows specialists and secretaries in other departments to produce graphics on their own computers and bring a disk to Agricultural Communications for imaging on a matrix camera.

A system now being developed will allow slides produced on Lotus Freelance to be transmitted to the matrix camera via telephone through a main-frame computer. This will allow district research and Extension centers, and perhaps even county Extension offices, to utilize the system.

The high-end service involves several sophisticated software packages that allow the graphics staff to use their artistic talents to produce more creative slides. Programs in use include West End Artwork, Brushwork, Chartwork, and Zenographics Autumn.

The software enables the artists to do freehand drawing and create 3-D images; airbrush text, texture maps, and create transparent effects; program for special effects, such as dropshadows, that can be further enhanced with only a few keystrokes; and draw on an extensive library of symbols, typefaces, and chart forms.

Hardware Increasing

The software, of course, does not work without hardware. The equipment consists of two workstations: an AT 286 with a Mitsubishi RGB monitor, and a Summasketch plus digitizing tablet and enhanced keyboard. This system, which has a Revolution number nine card to drive the graphics programs, is used as the high-end station for maximum-quality work.

The other workstation is an AT with an EGA monitor and Microsoft mouse. This system, driven by an ATI Wonder Card, is used to produce training materials and many low-end graphics projects.

A third station, which drives the Matrix QCR D 4/2 camera, is used to image the department's slides. An AST Turbo Laser/PS printer is used for hard copies and transparencies.

Word Processor Versus Quill Pen

Even artists who at first resisted plying the computer trade find they like the system. Artist Sheila Smith, who admits she had to be "dragged kicking and screaming to the computer," now compares working by computer instead of by hand to "writing with a word processor instead of with a quill pen and parchment."

Melanie Eirich, computer graphics specialist, agrees. She says that by using the computer "artists can get a better product in a fraction of the time required to do the job by hand."

Benefits For Nonartists

One new nonartistic use of the software is that of crop analysis by color, a procedure that allows a user with the right equipment to produce a program that defines data by color analysis. Bruce Sandhorst,



audiovisual specialist, explains, "We go into a field, record images of specific plot areas on videotape, bring the tape back, put the image through a frame grabber, and do a color analysis based on what we see on the computer. It's really an excellent application for computer technology."

Increased Productivity

Does the system's increased efficiency outweigh the expense? Sandhorst thinks so. "The real key," he says, "comes in increased productivity and creativity in computer graphics methods." He says that once the staff gets past the learning time, the system begins producing real benefits.

Eirich points out that production of a slide show without the use of computers requires coordination among the client, a layout artist, a photographer, and sometimes an art director. Thumbnail sketches and rough drafts must be sent back and forth, sometimes with only minor changes, making the process very time-consuming.

"But when both the artist and the client can see everything at one time right up there on the screen," she says, "it makes the editing process so much simpler. The computer really makes it easier for both the artist and the client." ▲

Opposite: The Agricultural Communications Audiovisual Unit at the University of Nebraska, Lincoln uses high-tech equipment to produce professionally designed slides and videos. Here, Melanie Eirich, a graphics specialist, works on a visual using an AT-286 computer hooked to a Mitsubishi RGB monitor. Employing a stylus, she draws on a SummaSketch Plus digitizing tablet. This page: Randall Paul, communications illustrator, discusses a map's design and format with Eirich. Both believe the computer has increased their productivity and creativity.

Cost-Effective Network In North Dakota

18 Extension Review



David G. Rice
Extension Computer Applications Specialist, and
Roger Egeberg
Extension Programmer/Analyst, Agricultural Communication, North Dakota State University, Fargo

Gathering around the new cost-effective NDSU ExtNet microcomputer system are (left to right): Roger Egeberg, programmer/analyst for ExtNet; David G. Rice, computer applications specialist; Andy Swenson, AGNET manager; and Bev Trittin, secretary, Extension Computer Services.

The North Dakota State University Extension Service spent several months evaluating the change from a very successful mainframe electronic mail and file transfer network (AGNET) to a microcomputer-based network providing these services. We estimated a payback of about 3 months to recover the \$6,500 we would spend on a state-owned system. Actual cost figures indicate a monthly savings of \$3,373, which resulted in a payback of less than 2 months. The ExtNet system along with the use of more microcomputer-based programs saves North Dakota Extension about \$40,000 a year.

NDSU ExtNet

North Dakota Extension used the AGNET computer system for electronic mail and file transfer for over 10 years. More than 5,000 electronic mail messages and over 10,000 news stories were transmitted a year. Reduced operating budgets meant we had to find a less costly way to send information electronically.

Our new electronic mail and file transfer system, NDSU ExtNet, runs on an IBM PC/AT compatible. It is Bell Technologies MPE with 4 MB RAM, a 72 MB hard disk drive, a 60 MB backup tape drive, and a six-port serial expansion card which supports multiple users.

We selected Microport System V/AT, a version of the UNIX operating system, because of the large body of UNIX experience on the NDSU campus and the portability of software to other UNIX systems. We believe an upgrade to a larger computer (running UNIX) could be made without major revisions of our software.

Total system cost was approximately \$6,500. It took 6 months' staff time to select, buy, program, operate, and debug the system.

File Transfer

A generic news program was developed to replace some of the file transfer programs previously available on AGNET. Our news programs allow individuals to upload text files (reports). Users can list the reports available and select those they want to download. We have four versions of the news program on NDSU Extnet:

- 1.- *County Agent's News* - News releases sent to County staff.
- 2.- *Markets* - This includes USDA reports, commentaries, and cash/futures prices.
- 3.- *News Release* - This covers agricultural and consumer topics.
- 4.- *Pest Report* - This provides updates on pest, disease, and weed control.

Extension Calendar

Our Calendar program maintains a database of events involving Extension staff. Information on dates, individuals involved, location, and a short description of the event are stored.

Costs

Electronic network costs consist of communication (phone) and processing (CPU) charges. The 1987 average AGNET CPU charges were \$2,369 per month. AGNET communication charges are much higher than similar charges for accessing ExtNet. The fixed communication charges for AGNET consisted of a high-speed leased transmission line and port rental at the host computer. The average leased line charge for AGNET access in 1987 was \$1,100 per month. The average AGNET port rental in 1987 was \$1,181 per month.

The cost of the ExtNet microcomputer system was \$6,500. The capital cost is interest rate times average value plus depreciation allowance. Although the machine will be used for many years, the reality of technological obsolescence requires a 3-year depreciation, or \$2,167 per year. Using an average value of \$3,250, an interest rate of 6 percent gives an annual capital cost of \$195. Maintenance cost calculated as the equivalent of contract cost is 10 percent of purchase price, or \$650 per year. System operation is estimated at \$1,000 per year. The total cost of this microcomputer central site is about \$4,010 per year.

The NDSU Extension Service supplied WATS lines to access AGNET and switched those lines over to ExtNet last November. Our WATS line charges averaged \$2,109 per month in 1987 and over the last 3 months averaged \$1,000 per month.

Much of the decrease in CPU and communication costs results from the fact that more problem-solving computer applications (FEEDMIX, DI-ETCHECK, FARMPROGRAM, etc.) were run on the microcomputer than on AGNET or ExtNet. ▲

Communicating For The Future

Extension Review 19

The Minnesota Extension Service has taken a step toward the future by creating a unit whose mission is to design, develop, produce, and disseminate all Minnesota Extension materials, regardless of content or medium.

The Educational Development System (EDS) comprises more than 100 faculty and staff members who were formerly part of four separate units: Communication Resources, Computer Information Systems, Extension Office Resources, and Office of Special Programs.

Strategic Planning

As part of an ambitious statewide Extension strategic planning effort, administrators of the four staffs had identified opportunities and potential barriers facing their units. They began informal discussions with the staff development leader to see what changes might be possible.

The four units found that they had overlapping, and sometimes confusingly similar, responsibilities and expertise: Communication Resources (CR) handled print materials, video and audio projects; it also handled distribution of educational materials.

Computer Information Systems (CIS) was responsible for design, development, and maintenance of computer software—both educational and administrative—as well as the organization's relatively new microcomputer network.

Office of Special Programs (OSP) managed conferences and correspondence study in a variety of content areas, handling all aspects from market research to local arrangements.

Extension Office Resources (EOR) provided the Extension organization with overflow clerical support, managed mail services, and maintained an extensive supply inventory.

Each unit carried out some training activities for others in Extension; CIS had the most intensive training role.

Finding A Solution

Extension faculty and administrators expressed concern and outright confusion about which unit was responsible for specific functions, especially those changing as a result of the adoption of new technology. The initial administrative discussions centered on ways to make the systems of the various units more compatible with each other. Eventually, however, a consensus developed that a more effective solution might involve some kind of reorganization.

The resulting proposal identified three working groups, specified several state leader positions and described their roles, proposed that the new unit be headed by an assistant Extension director, and discussed how the new unit would relate to other Extension units.

As the staff considered the proposed change, meetings were held, voices were raised, and opinions were shared. The proposal, essentially unchanged, was slated for implementation. An assistant director was named to head the unit, and a staff advisory committee was appointed.

Plan Becomes Reality

The impact on soon-to-be EDS staff and faculty was tremendous—anger, excitement, fear, relief, and a flurry of activity characterized the response. At times, then and now, the reasons for the new structure, its goals and purposes, are lost from view.

The new unit consisted of three work groups functioning across media and program areas: program design, product design, and product development.

Staff assigned to program design were responsible for working with specialists and agents to identify learner needs, develop behavioral objectives, and specify programs, activities, and products to accomplish these objectives.

Product design staff pulled together EDS teams to design, develop, and disseminate specific

program components and educational materials and to coordinate these processes.

Members of the product development group brought specialized skills to the product teams; they also maintained a variety of systemwide support systems.

Refining The Structure

Both the mission and structure of EDS made assumptions about issues-focused programming that, to some extent, underemphasized the continued importance of traditional emphases tied to specific program areas and departments. After EDS had been in operation about 4 months, its structure was modified to better accommodate and support the major program areas. Although the functions of program design, product design, and product development were retained, EDS staff and faculty were given relatively permanent team assignments.

These core teams, ranging in size from 4 to 20 members, are assigned to program areas, issues, or organization-wide systems. Each team represents the organization's personnel and fiscal commitment for communications and educational products in a particular program emphasis. Freelance assistance is secured to support temporary grant-funded projects.

Assessing The Benefits

It is too soon to make a final assessment of the success of the Educational Development System and the strategy it provides for meeting Extension's needs for design, production, and dissemination of education and information resources in an increasingly technology dependent era. However, as a means of integrating technology systems and instructional design principles into ongoing development of educational and informational products, EDS clearly is working. ▲

Patricia Kovel-Jarboe
Extension Project
Director,
Telecommunications
Development Center,
University of
Minnesota, St. Paul

Concepts Versus Keystrokes

20 Extension Review

David G. Rice
*Extension Computer
Applications Specialist,
North Dakota State
University, Fargo*



Opposite: Attendance at microcomputer training by Extension at North Dakota State is limited to allow maximum hands-on practice. This page: All participants at these workshops sit at 8-foot tables equipped with microcomputers and printers; classroom is also equipped with an overhead projector system.

Most North Dakota farmers and ranchers considering the purchase of microcomputer systems 5 years ago had very little knowledge on which to base their decisions. Microcomputer training and assistance from the private sector was available only from vendors who sold the systems; they often had little expertise concerning agricultural applications.

To answer this need, the North Dakota State University (NDSU) Extension Service launched a major effort to provide microcomputer training to Extension clientele at sites throughout the state. Since the workshops began in 1983, the level of training has advanced steadily as clients have become more sophisticated computer users.

Hands-on Training

For the average microcomputer user, hands-on training has been found vastly superior to textbooks, manuals, lectures, or even the common demonstration-style

presentation. North Dakota's hands-on microcomputer workshops have used a variety of hardware and software configurations. In each case, the instructors' table includes a microcomputer system and an overhead projector system that permits projection of the monitor's screen for viewing by the group.

Participants are seated at 8-foot tables arranged in classroom style. Each table has two microcomputers and printers. Because the workshops are taught by teams of two instructors, participants receive considerable individualized help.

Maintaining Flexibility

The range of expertise among participants presents a challenge for the instructors. They vary the number and types of examples according to the general competency of the group. Maintaining flexibility permits the instructors to challenge the advanced user while not losing sight of the beginner.

Workshop registration fees, which are collected in advance, have ranged from \$10 to \$75; most have been in the \$10 to \$25 range. Reduced fees for the second family member encourage farming partners to attend. The fee covers notebooks, handouts, and, in some cases, software diskettes.

What To Teach?

The content of microcomputer workshops must be continually evaluated and revised to meet current concerns. The subjects covered in the North Dakota workshops are chosen largely on the basis of requests from clientele and county Extension staffs.

The multitude of programs and systems in use makes it impossible to offer specific training for all software on all systems. Thus, the instructors are careful to teach "concepts" rather than "keystrokes."

The NDSU Extension Service has reached more than 2,200 people in the last 5 years through 72 microcomputer workshops, most of which involved hands-on training. Topics have included, for example:

Introduction To

Microcomputers—This workshop is for people considering the purchase of a microcomputer system. The 2-day general sessions included possible uses of farm-based microcomputer systems, how they operate, and what a typical system would cost. Instructors demonstrated several software packages and applications.

Participants received hands-on training on booting up the microcomputer and using elementary operating system commands. A taste of BASIC programming was included, and most of the sessions offered hands-on experience with electronic spreadsheets and database managers.

Accounting and Financial

Management—Demonstrations covered the many features of farm accounting programs, cashflow analysis, computerized cost-of-production analysis, farm program analysis, and market information retrieval systems. The hands-on training consisted mainly of adding to an existing chart of accounts, entering income and expense transactions, and printing out reports from the farm accounting program. Instructors stressed the importance of a complete farm management computer system.

Farm Accounting Symposiums—

These workshops brought Extension clientele together with several computer software vendors, each of whom paid \$50 for the opportunity to participate. Extension provided lists of features to look for in an accounting program; participants met with vendors to determine which packages included the features of most importance to their individual operations. The vendors welcomed the opportunity to



demonstrate their software, and symposium participants appreciated the chance to view and compare farm accounting programs with no pressure to buy.

Electronic Spreadsheet Clinics—

After a basic introduction to electronic spreadsheets, these workshops provided hands-on experience in developing spreadsheet templates. The As-Easy-As electronic spreadsheet (user-supported software) was used for the training, and a copy was distributed to all workshop participants. Instructors demonstrated advanced spreadsheet features using Lotus 1-2-3.

AGNET Seminars—These seminars focused on how to log on and off the AGNET marketing information system and the most cost-effective methods for retrieving information. Instructors helped participants identify what information is available among the hundreds of marketing reports accessible through AGNET.

Database Management—Using the PC-File III program, instructors guided participants through many farm-related database management applications. They received hands-on experience with field records, cow-calf records, checking accounts, grain tickets, maintenance-repair logs, and mailing labels. Each partici-

pant received a copy of PC-File III. Instructors also demonstrated the use of more powerful database programs.

Advanced Spreadsheet Clinics—

These clinics were for experienced users of Lotus 1-2-3 or similar programs. Topics included design and time-saving tips, how to minimize errors, macros, database features, and printing and graphing options.

Traveling Computer Lab

The experience gained through these workshops has illustrated the importance of bringing the computer lab to the people. Participants throughout the state said that they appreciated not having to drive 100 miles to attend a workshop. Attendance in some of the more rural communities exceeded that in larger cities.

The North Dakota Extension Service remains committed to providing this type of training for its clientele because it is needed and appreciated. It comes at great cost, however, mainly because of the time involved. The 7- to 16-hour hands-on workshops presented over the last 5 years have required nearly 900 hours of staff time.

As a result of learning the concepts of microcomputer use and data analysis, Extension clientele are becoming more efficient managers. The "key-strokes" come easier after the "concepts" are understood. ▲

Is There An Uplink In Your Future?

22 Extension Review

James L. Hamilton,
Head,
Extension
Communications,
Iowa State University,
Ames

Extension at Iowa State University (ISU) is using satellite technology to deliver educational materials to all corners of the state. The satellite medium has proven to be a practical, cost-effective, and efficient delivery mechanism for timely messages. Although still experimenting with the medium, Iowa can offer some recommendations based on its 3 years of activity.

The first recommendation is to assess the need. Satellite distribution works well for timely messages, such as drought information. Programs that otherwise would require travel by campus specialists to deliver information to small groups in many locations are also candidates for satellite.

Target audience selection is critical. Printed support materials and time for telephone response and feedback seem to be necessary. Programs range from a simple discussion filmed in the studio (often referred to as "talking heads") to full productions created in the field with multiple cameras, crew, and remote truck. There will be a surprise along the way as choices and adjustments are sometimes required on the air.

Campus Infrastructure

The second recommendation is to examine the existing campus infrastructure. This will affect the available options.

Some factors to examine are level of budget, TV production capacity, administrative support, and attitudes toward cooperative activities.

ISU's situation is unusual, since it is one of only two midwestern universities that have a commercial television station on campus. The university operates WOI-TV, the ABC affiliate for the Ames/Des Moines area. The purchase of a satellite uplink came about for many reasons having little to do with land-grant educational outreach.

Another important factor is that ISU operates its own phone company and has a new fiber-optic telephone system. As a result, programs for satellite transmission can originate not only from the five TV studios on campus, but also from any room with a telephone jack—including labs, classrooms, theaters, and lecture halls.

Cost Considerations

The third recommendation is to be aware of all the potential costs and seek funding from a variety of sources. Costs revolve around three basic elements: TV production capability, uplink (transmission) access, and downlink (reception) sites.

ISU Extension Communications already had access to transmission facilities and was producing



daily TV programs. This talent and equipment was redirected to production of satellite programs in support of high-priority Extension emphases in the state plan of work and the Extension National Initiatives. Extension sometimes charges limited user fees (\$5) for noncredit programs; underwriting grants from commodity/producer groups help pay some production costs.

After renting and borrowing receiving equipment during the first year, Extension was convinced that downlinks require more time and trouble than programming. In summer 1986, satellite receiving equipment was installed at each of the seven area (regional) Extension offices and at 30 county Extension offices throughout the state. During the next phase Extension added 42 more sites; soon, no one will have to drive more than 20 minutes to reach an ISU Extension downlink site.

The receiving equipment for each site includes a mesh-design steel antenna dish designed to withstand the wind and snow of Iowa's winters. The fully automatic motorized dual band system features a top-of-the-line automatic satellite receiver with pre-programmed memory. The large volume of the purchase and the fact that it was subject to the state bidding process resulted in a price of a little over \$1,000 per site for a system that retails for more than \$2,500. Installation costs varied from \$200 to \$1,600 per site depending on local factors. At the county Extension offices, Extension paid for the equipment with campus funds; in most cases the Extension council paid the installation costs.

Other equipment, such as color monitors, videocassette recorders, camcorders, and rolling carts were supplied as needed.

Statewide Tool

Iowa's decision to build an uplink was made in late May 1985, and the unit was opera-



This satellite dish at the County Extension office in Marshalltown, Iowa, was installed on a tall pole beside the building both for better reception and as a security measure against vandalism. Since summer 1986, enough satellite receiving equipment has been installed at county Extension offices throughout the state so that no one has to drive more than 20 minutes to reach an Iowa State University Extension downlink site.

tional in only 72 days. The first Cooperative Extension program aired on January 13, 1986, linking 4-H members statewide for the first time. Four more programs were delivered that semester. A total of 19 satellite Extension programs aired in the 1986-87 school year. The 1987-88 school year also had 19 programs, including the longest (6 hours) and the one with the shortest lead time (2 weeks from planning to air time).

ISU Extension has decided to adopt the satellite television system throughout the state as one of its standard tools for delivering educational programs. Soon, this equipment will be as common as telephones, computers, and photocopiers in Iowa Extension offices.

ISU Extension designs most of the satellite programs for Iowa audiences, but makes them available to other states free or at cost of educational materials. The programs are listed on Dialcom under the "Sat Cal" heading. ▲

Keeping Nevada Ranchers In Business

24 *Extension Review*



Lora Minter
Extension Publication
Writer,
University of Nevada,
Reno

On the one hand you have the Maytag repairman of that well-known TV commercial—bored, lonely, yearning for that eternally elusive phone call promising work.

On the opposite hand you have Ron Torell. The phone in his Elko, Nevada office rings incessantly; his busy schedule allows no room for boredom.

In spite of the demands, 33-year-old Torell insists he has the best job not only in the state, but in the entire country. He is the Extension livestock specialist for northeastern Nevada.

Torell believes some of the most progressive cattle-producing families in the Nation live in the northeast corner of Nevada. He also suspects a portion of their success can be attributed to a willingness to explore new technologies.

"These people are searching for ways to make their industry competitive," he notes. "My job is to help them do just that."

Consigned Cattle Samples

Bob Reed, chair of the Nevada Cattlemen's Research and Development Committee and owner of a ranch near Elko, is just one livestock producer who utilizes Torell's expertise. Reed is one of six livestock producers who consigned a "representative sample," of cattle to a 1987 retained ownership/feedlot program initiated by Torell. As part of the program, producers traveled to an Idaho feedlot to inspect their fattened cattle, toured a meat packing plant, and received performance and carcass desirability data on the just-slaughtered animals.

Producers were told how their cattle rated in quality grade, marbling, fat thickness, and size of rib eye, among other things.

"This program provides ranchers with an opportunity to discover if they are producing the genetic type of animals that will hang a choice carcass at a young age and still appeal to consumers," says Torell. "Without this information ranchers cannot accurately adjust the genetic makeup of their herds to provide a more desirable product."

"In the future, cattle will be sold based on the quality of the finished beef hanging on the rail, not by the pounds of live beef across the scale," notes Torell. "Today's health conscious consumers are demanding lean beef and forcing ranchers to change the way they produce and market cattle."

In 1987, six producers provided 50 cattle for the retained ownership program; last year 22 producers volunteered 220 steers for the experiment.

Satellite Auctions

Retained ownership is one marketing option that may increase the price a rancher receives for cattle. Another alternative introduced by Torell is selling animals via satellite auctions.

The vast majority of the area's cattle traditionally have been marketed through a few order buyers, Torell reports. In a satellite sale, however, buyers from across the country bid on cattle after reviewing a videotape and herd data sheet.

Satellite sales were introduced to northeastern Nevada producers in early 1987 during an Extension-sponsored marketing workshop. In July that year, Lee Livestock owners Ed, Paul, and Mike Sarman became the first ranchers in the area to sell cattle via satellite. Since then, 2,000 head of local cattle have been sold in this manner.

"The average sale price has been \$.03/lb. profit above the local market," Torell says, adding, "Producers feel that local buyers have been forced to offer a price 3 percent higher than in previous



years because of the increased competition. Satellite sales are now setting the local market."

Breeding Soundness Program

As a livestock specialist, Torell also addresses the profitability concerns of Nevada's sheep producers. Torell, Area Chair A.Z. Joy, and Extension Veterinarian Bill Kvasnicka have created a breeding soundness program designed to eradicate ram epididymitis, a disease that reduces fertility in approximately 41 percent of Nevada rams.

The program is designed to educate producers about the cause and control of the disease, determine the extent of infected rams, and identify rams that need to be culled. So far 65 percent of Nevada range rams have been tested and 90 percent of Nevada's range sheep producers have attended the educational seminars.

Torell and Joy have earned a national, first place award from the National Association of County Agricultural Agents (NACAA) for their ram epididymitis program.

In another trial, personnel from seven ranches are cooperating with Torell to obtain pelvic measurements on first calf heifers. Approximately 1,400 heifers have been measured; results will be distributed to all producers in the area.

One thing comes out loud and clear when talking to northeastern Nevada ranchers—they want to obtain the best prices they can for their beef, and they want to diversify to increase profitability. Their future depends on it.

Torell and his programs influence the future of these ranching families—in more ways than one. Many of the 4-H youth he teaches today will operate ranches in the future.

Information From 4-H Program

Torell's "4-H Live Animal to Carcass Evaluation" has provided more than 300 4-H youth and 200 producers with detailed animal and carcass information. 4-H'ers in the beef project raise an animal while being taught about animal health and nutrition, halter breaking, handling, financing, fitting, and showing. Torell then prepares a slide presentation that shows pictures of each animal—side and rear views of the feeder, a ready-for-slaughter animal, and the hanging carcass with rib eye exposed.

Because of this program, Torell was selected from county agents nationwide to receive a "Search For Professional Excellence" award, presented at the NACAA's 1988 convention. ▲

Extracted from an article in AGFORUM, Fall 1988, Vol. 4, No.3, a quarterly newsletter published by the Agricultural Information Office, College of Agriculture, University of Nevada, Reno.

Opposite: To increase the firm's ag profitability, Mike Sarman of Lee Livestock (foreground) reviews a computer program with Ron Torell, Extension livestock specialist. This page: Torell (right) discusses a beef carcass with Buddy Legarza, an Elko, Nevada slaughterhouse operator.

The Software Solution

26 Extension Review

Carol Y. Swinehart
Extension
Communication
Specialist,
Sea Grant Extension,
Michigan Sea Grant
College Program,
East Lansing, Michigan

The demand for boat slips like these along the River Raisin south of Detroit makes many marina operators consider expanding their facilities. Sea Grant Extension software helps district agents analyze and explore options before clients make investments of capital.



The telephone rings in Stephen Stewart's office in Mt. Clemens on Lake St. Clair, 30 miles north of Detroit. Stewart is a district agent for Michigan Sea Grant Extension.

The telephone call is from Pam Schmitz of Monroe. Schmitz explains that she and her partner Terry Runyon are hoping to build a new marina on the River Raisin, a sluggish stream that meanders through the agricultural area of southern Wayne and northern Monroe counties and empties into Lake Erie at the city of Monroe, 30 miles south of Detroit.

Schmitz has heard that Stewart may be able to help them develop their marina business dream into a reality.

Since 1977, Stephen Stewart has served the seven counties that extend from the Ohio border near Toledo on Lake Erie north through the Detroit River, Lake St. Clair, the St. Clair River, around the "thumb" area of Michigan's lower peninsula, and along the eastern shore of the Saginaw Bay to Bay City. The population of this 475-mile stretch of shoreline is 4 million people—roughly half the state's population. Also to be found there are a quarter of Michigan's anglers, 22 percent of its recreational boaters, 40 percent of the state's marinas, and 59 percent of the total dockage for recreational vessels.

Developing Tools

With this much territory, dozens of coastal communities, and a variety of clientele, Stewart has had to develop some efficient and effective tools. About 5 years ago, Stewart realized that software could help solve some peoples' basic problems with their coastal property and businesses.

Since then, Stewart has developed several spreadsheet programs to assist various groups in making decisions. He schedules an appointment with his new clients, Pam Schmitz and Terry Runyon, and mails them a questionnaire about their proposed project to complete and return before their meeting. How many slips (seasonal or transient, wet, dry stacked, or trailer) do they intend in their new marina? What revenue do they hope the marina will produce? What are the marina's total projected operating expenses? What's the projected capital budget?

The questions continue—and include specifics about personal investment, short- and long-term loans and interest, projected life of new construction for depreciation purposes, and other important factors.

When Stewart receives their questionnaire, he enters the responses in the computer model. Within moments, the computer produces an analysis of the total investment the partners can afford. It tells them how they might break even by charging certain rates for their slips and other services. The partners have also been given the building blocks of a business plan, and begin to realize how they will need to organize certain aspects of their operation.

Stewart examines the printout and meets with the partners. At the meeting, he suggests they contact the Michigan Boating Industries Association which can offer them valuable information. He also recommends they call former directors of the Association who can provide the perspective of a successful marina operator and legal expertise.

Support For A Dream
Schmitz and Runyon are elated at the free support they have received from a single phone call. Their dream is taking shape—they can envision a marina that can handle large power and sail craft, with accommodations for captains and crews at a hotel on the premises. They decide to maintain contact with Stewart and the others and continue to benefit from the organizational and management information provided by the Sea Grant Extension agent.

To Grow Or Not To Grow

A hundred miles north of Mt. Clemens lies Huron County with 93 miles of Great Lakes shoreline—the longest of any in the state. This area is largely undiscovered as a major tourist destination, but because of its proximity to the state's major metropolitan area is expected to attract visitors and permanent residents in the future.

Several Huron County communities are coming to grips with various aspects of growth related to their Lake Huron location. Although major expansion is probably 10 years away, numerous spots are blossoming in anticipation of waterfront development. Carl Osentoski, executive director, Huron County Economic Development Corporation, knows they need help, especially research-based information that can help them choose the right path, whether they are ready to embrace development or believe it more advantageous to resist it.

Caseville, for example, is ready to expand its marina. Business leaders there need additional information on the number and size of slips to build and ways to handle the increase in customer traffic. The village council in Port Hope has decided the community needs to evaluate how much growth it can sustain. And community leaders in Harbor Beach and Port Austin are attempting to quantify impacts of increasing boating activity and waterfront development.

Stewart has created models that can assist communities in determining how much economic return they will get from an influx of boaters or the building or expansion of a marina.

Osentoski has called on Stewart numerous times for community evaluations and believes that this factually based approach lends credibility to the plans developed by local governments. "Sea Grant information gives local people making decisions an edge," he says. "It has helped them, not

only with planning and development, but also with marketing and promotion."

Other Clientele

Some of the other clientele who have benefited from Stewart's spreadsheet approach are charterboat captains, members of bottomland preserve committees, and owners of shoreline property and commercial fishing operations.

Great Lakes shoreline property owners, for example, have had some particularly difficult decisions to make in recent years, with widely fluctuating water levels, accelerated erosion, and coastal flooding problems. Their questions usually involve knowing whether it pays them to invest up to several times the value of their land and structures in erosion mitigation and floodproofing measures.

By completing one of the Sea Grant questionnaires with information about their use of the property, its physical characteristics, their ability to invest financially in short protection and other data, they can receive an analysis of options for shore erosion mitigation.

Informed clientele can influence others. Stewart tells of one property owner who, after receiving his analysis and information about proper design of seawalls, convinced a local coastal contractor to modify his installation procedures to improve drainage.

The software has definitely been valuable to Stewart and his Michigan Sea Grant Extension colleagues in managing clientele information. And Carl Osentoski, Pam Schmitz, Terry Runyon, and many others would definitely agree that it has helped clients with their decisionmaking needs. ▲

Choosing The Right System

28 Extension Review

Esther Maddux
Extension Financial
Management Specialist,
and
Tom H. Broom
Extension Head,
Computer Services
Department,
University of Georgia,
Athens



Computers are a fact of life for today's educators. Unfortunately, the system you purchased a few years ago may not meet your current requirements. When the time comes to upgrade or replace it, careful planning will help you select the best equipment for your money.

The first and most important step in choosing the right equipment is to define the educational tasks for which you will use it. Next, determine what software and hardware will be required to carry out those objectives. Here are some guidelines for the computer system requirements for several typical Extension education tasks.

Desktop Publishing Task:

To produce materials that have columns, pictures, graphs, and a variety of type styles.

Software And Hardware Requirements:

- . Word processing program
- . Desktop publishing program
- . Graphics program
- . Hard disk drive
- . 640K memory (minimum)
- . Color monitor
- . Laser printer
- . Mouse

The software and the laser printer must be compatible and correctly interfaced. The desktop publishing program must be able to "read" and manipulate both the text and graphics files. It also must have a print driver program that will enable the laser printer to produce the finished product. The printer must be able to print text and graphic images at the same time. Be aware that a significant amount of time must be invested to learn all the features of this hardware and software.

Financial Materials Task:

To produce educational resources concerning farm, business, or home finances.

Software And Hardware Requirements:

- . Electronic spreadsheets
- . 640K memory (minimum)
- . Hard disk drive
- . Printer with graphics capabilities

Choose an electronic spreadsheet that will meet your immediate needs and that the manufacturer will support in the future. If you are producing spreadsheet templates for distribution to your clientele, determine which spreadsheet the majority are already using.

Program Evaluation Task:

To produce program evaluation summaries and reports.

Software And Hardware Requirements:

- . Database program
- . Electronic spreadsheet
- . Statistical package
- . Communication program
- . Computer with minimum cpu speed of 10 MHz
- . 640K memory (minimum)
- . Hard disk
- . Modem
- . Printer with graphics capabilities

A database or spreadsheet is necessary to input data. A spreadsheet will allow you to do elementary statistics and graph the results. To make an indepth analysis, such as determining the relationship between variables, you will require a more powerful

statistical package. After you enter the data in a database file, you can either analyze it with your own statistical package or use a modem to access the statistical capabilities of a mainframe computer. In either case, the computer can generate descriptive statistics as well as show relationships.

Visual Presentations Task:

To produce visuals.

Software And Hardware Requirements:

- . Word processor
- . Electronic spreadsheet
- . Graphics program
- . Slide show presentation package
- . 640K memory (minimum)
- . Hard disk
- . Mouse
- . Color monitor
- . Overhead projector
- . Camera and program (to capture screen image for slides)
- . Plotter or printer to produce transparencies
- . Projection device to show PC screen

Any image that can be produced on a PC screen can be converted into a transparency, slide, or visual show. To make an overhead transparency, you need a printer or plotter to produce the image. To make a slide, you must transfer an image from the screen or disk file, through the computer's serial port, to a camera.

In addition, you can create visual shows from computer screen images that are projected one at a time, in any order. Presentations can be either black and white or color, depending on the equipment. You may need an adapter card to interface the

projection device with your PC. Some of these devices require an overhead projector. The images may be blurred unless you use a late-model projector with a good cooling system.

Electronic Communication Task:

To communicate electronically.

Software And Hardware Requirements:

- . Communications program
- . Modem

By sending articles electronically to a newspaper's typesetter, you can save time and reduce the possibility for errors. Some state Extension Services use electronic mail as a way to communicate timely information promptly to county offices. Local and national databases accessible from your office can give you information on virtually any subject. Prices vary widely, depending on the type of specialized information you need.

Existing technology would permit NARS reports to be submitted electronically at the state and national levels if funding were made available.

Extension at the University of Georgia is currently using IBM PC's or IBM-compatible computers. WordPerfect 5.0 is used as a word processing program. Those involved with desk-top publishing use Pagemaker for layout and laser printers to produce copy.

Portability

After you evaluate the computer potential of all your educational tasks, consider this final question: Will you be working mainly in one location, or will you need to carry a computer with you as you travel? If the latter is the case, today's portable computers have most of the features that you will require. ▲

INFO-U Answers You!

30 *Extension Review*



Sharon K. Conlan
*Extension Educator and
Assistant Professor,
University of Minnesota,
St. Paul*

One of the most visible needs in a county Extension office is for an efficient way to answer the multitude of home horticulture and food processing/preservation queries that peak during the growing season.

INFO-U, an automated telephone information service (audiotex), is being tested by the University of Minnesota Extension Service. INFO-U has two major advantages: it does not require a live operator, and the cost of its

hardware and software is sufficiently low to encourage its use at the county level.

The system was originated by the Wisconsin Extension Service, who agreed to help with the

installation in Minnesota. Wisconsin received funding from Minnesota for the sharing of their scripts, software, and experience.

Trial Period

Minnesota's INFO-U is now in operation in the county Extension offices in Duluth (St. Louis County) and Rochester (Olmsted County.) The 14-month trial period began in September 1987.

The goals of the project are: To reduce the burden on existing Extension faculty caused by budget cuts accompanied by increased demand for popular information services; to extend Extension information services at non-traditional hours to sites other than the county office; to directly involve faculty in the design and testing of new technologies; to explore the potential for regional Extension cooperation and resource sharing; to determine if the audiotex system should be extended statewide; to increase recognition of the Minnesota Extension Service; and to assess the effectiveness of the audiotex project in meeting the needs of consumers. Other objectives are to identify factors which will promote or limit the effectiveness of the audiotex system as it is implemented in other areas, and ways to improve the audiotex system before it is extended statewide.

Using The INFO-U System

The INFO-U system is being used in five ways:

1.- To respond to clients who call the system directly to request specific messages. Clients with touchtone phones can refer to a brochure to choose the message they want and activate the message by pressing the corresponding 3-digit number on their telephone touch pad. At the end of each message, the caller may activate another by entering a new number. The caller with a rotary-dial telephone hears a special tip of the day.

2.- To serve clients transferred into the system by county office staff. When a caller phones the office to ask a question and no agent is available to respond, the staff member who answered the call checks to see if there is an audiotex message on the subject. The caller is invited to listen to the recorded message and then call back immediately if the question has not been answered.

3.- To promote Extension publications. At the end of each message, callers may leave their name and address if they want to receive a list of available publications. These mailings are done daily.

4.- To make local announcements. Custom messages might include information about special classes; crisis situations (such as a sudden insect infestation); special local events; or the activities of organizations (such as 4-H clubs).

5.- To serve callers transferred into the system after talking to an Extension agent. This option is not used often, but it is available to the agents.

System Description

The audiotex system, as developed by Wisconsin Extension, is a cost-effective, flexible, and useful outreach service based on a PC-AT compatible computer with an 80mb hard disk drive. The size and number of hard disk drives can be increased to provide a larger information base.

Voice messaging activities, such as sound digitizing; file compression; and telephone call handling are managed by an expansion board from the Dialogic Corp. Programming the events and activities of the system is accomplished with a separate software package from Telephone Response Technologies. An applications program developed by the Wisconsin and

Minnesota Extension Services is specifically designed to work with the system. The cost of the hardware is approximately \$6,500.

While extensive programming experience is not needed to manage this combination of hardware and software, many offices for which this technology can be useful will not have the expertise to comfortably assemble the components. Users without substantial computer experience would need to arrange for some technical assistance, particularly in the beginning. As used in Minnesota and Wisconsin, however, the system is easy to maintain once it has been placed in operation.

Future Plans

The pilot testing of the system in the two counties is meeting the goals of the project, and INFO-U is expected to continue to operate beyond the pilot period. Other areas in Minnesota are being explored as possible sites for an INFO-U system.

Both the University of Wisconsin and the University of Minnesota are interested in helping other states get started with an audiotex system.

For further information about INFO-U, contact Bob Ellison, Wisconsin Extension, at (608)263-4928 or Bob Rubinyi, Minnesota Extension, at (612)624-2708.

Research Report Available

To obtain a free monograph reporting the Minnesota INFO-U research results, contact:

Telecommunications Development Center
Minnesota Extension Service,
University of Minnesota,
43 Classroom Office Building,
St. Paul, Minnesota 55108
Phone: (612)624-3616 ▲

Video Beams A Forest Education

32 Extension Review

Steven Anderson
State Extension Forester
and Assistant Professor
of Forestry,
Department of Forestry,
Oklahoma State
University, Stillwater

Videoconferencing is a recent effective method used in natural resources educational programming. Videoconferencing, involving the production of a satellite broadcast which subsequently can be received at any location that has a satellite dish, can employ a variety of formats. They can be previously taped and edited, they can be a "live" broadcast, or they can be a combination of both. They can include presentations by professional personnel, interviews with landowners, computer graphics, and action "cutaways" of appropriate subject matter. The format also lends itself well to panel discussions where questions can be received from the audience via telephone and answered immediately on the air.

The educational possibilities for this method of communication become apparent when one considers that as of March 1988, the National Satellite Broadcasting Corporation had installed 2.8 million satellite dishes in the United States. Seventy percent of these satellite dishes are on farms and ranches. Rural homes are installing dishes at the rate of 20,000 to 25,000 per month.

In March 1988, Oklahoma Extension—in cooperation with the Texas Agricultural Extension Service and the Texas Parks and Wildlife Department—produced a 1-1/2 hour videoconference titled "Management For A Hunting Lease Operation."

Although dealing specifically with lease hunting, the program was applicable to recreational leases in general. The program provided a history of lease hunting and the pros and cons of this type of operation. In addition, the program was designed to address identification of management objectives, marketing techniques, the elements of a lease, and liability considerations.

The intent was to provide practical information to the farmer, rancher, or landowner who is examining a recreational lease as an alternative enterprise. The target audience also included natural resource managers.

Viewing Sites

In Oklahoma, 16 locations were designated as viewing sites. At each site a representative from the State Department of Wildlife Conservation was present to answer any questions not answered during the program.

In Texas, county Extension agents arranged for viewing sites that had access to a satellite dish. Five locations—including a local rancher's house and a Vo-Ag building—were used.

The night of the program 20 other states received the program. Approximately 1,500 to 2,000 land managers and landowners viewed it.

Effect On Wildlife Habitats

In Oklahoma, the participants who returned an evaluation form indicated that they have a combined ownership of over 80,000 acres. Our follow-up phone survey, performed 6 months after the videoconference, revealed that some landowners had or were going to make improvements on over 16,000 acres as a result of the program.

The videotape has been used in landowner programs in Oklahoma concerning forestry and wildlife and will be used as instructional material for a range improvement class.

Other State Responses

One of the bonuses of producing videoconferences is the residual value since programs can be taped and reused in total or in part. Over 15 organizations have purchased copies of the program to use in further educational efforts.

The following is a list of how Extension personnel in various states intend to use the program—

New York - Plans are under way to use the videotape in a program on hunting lease alternatives. It will be made available to county agents and representatives of outside organizations.

Maine - The videotape will be used in the state's alternative agriculture and small business issues programming. There is a possibility of it being used in public policy classes.

Tennessee - Since the initial broadcast, 300 farmers have viewed the videotape. The tape was edited into a 15-minute segment and shown at four landowner meetings.

California - The state included the program in their video library. They plan to show the tape at a membership meeting for a new trade organization.

Delaware, Vermont, and Wyoming will use the program in their videotape loaner systems and in future workshops.

Videoconferencing represents a large investment in hardware and effort to produce quality programs. However, the natural resource community must utilize all available avenues to produce the most effective educational materials. Although not a panacea for all future educational efforts, videoconferencing must be considered in our educational programming. As landowners and natural resource managers become more familiar with the medium, and as the delivery infrastructure improves, videoconferencing will represent an effective means to involve a national audience and segments of the target population difficult to reach. **A**

Challenges Of The Computer Age

Computers will play an increasingly important role in Extension at all levels. Vance Hamilton, Assistant State Director for Support Services at North Carolina Agricultural Extension Service (NCAES) puts it this way: "We started with the assumption that computers were tools for providing educational programs for clientele. We now realize they are important management information tools for us and a means for delivering information more efficiently."

Computers are used in information management (e.g., mailing list), document processing, and communications. A major use of computers at NCAES is the electronic mail system that has been running for over one year.

According to Ed Mrozek, computer services supervisor with NCAES, all parts of Extension are now "hooked up to the rest of the world." County offices are able to obtain accurate and up-to-date information on a variety of topics. Most departments at NCSU maintain active news services. The Department of Agricultural Communication provides news articles that can be "down-loaded" and used by counties in local newspapers. "Computers," says Mecklenburg County Extension Director Neill Cameron, "allow information to be customized for clientele."

Computer education, Ed Mrozek believes, must occur at several levels. "We first have to educate the administration on the uses of computers so they can become strategic planners," he says. "They must be kept up to date on important technological developments." Middle managers, such as district directors and specialists-in-charge, need

education, he points out, so they reinforce the importance of computers and instruct their staff on what to do and how to use computers correctly.

"As for Extension personnel becoming computer users," Mrozek comments, "we need a multi-faceted education involving hands-on experience, repetition, and reinforcement."

Strategic planning must also provide a vision of what the ultimate computer system would look like. "County offices must be sure which direction to take," says Cabarrus County Extension Director Alvin Stanford, "to insure technology is compatible and up to date. State Extension needs to determine what the most applicable system would be. After this is well thought out, then we need to commit ourselves to one system so that we can build on it."

Overcoming Obstacles

"Our challenge," says Vance Hamilton, "is to find ways to finance the technology." In North Carolina, the funding, to date, has been a combination of state funds and private sector contributions. Some county offices have been able to purchase additional computers with county funds.

Limited staff access to computers is a related constraint. "With 10 to 20 people in some offices and only one computer," Mrozek says, "each person will be lucky to get one hour every other day. They need time to practice."

This is a particular concern to Neill Cameron who adds that, "we are running so fast to carry out programs that we don't have enough time to familiarize ourselves with computers."

Extension Sociology Specialist Steve Lilley suggests giving agents more time to learn to use computers. He cautions that we

must recognize the costs of learning a new technology. "We may see some short term drop in productivity," he says. "The technology itself is unnecessarily complicated. Novices have to learn too much at one time. In fact, many people are not comfortable with the most basic computer skill, namely, typing. It will take time for everyone to become comfortable with computers."

Dan Hoag, Extension economics specialist, feels that Extension spends a lot of money and effort developing computer materials (software) for clientele. However, Hoag believes that little time and effort are spent helping clientele learn why and how they should use it. The traditional mode of conducting a 2-hour workshop will not work, Hoag comments. "People need hands-on experience with computers," he says.

Future Opportunities

"In the future we will discover more new educational uses for computers," Hamilton says. "We can help build the interest and skills of our clientele, but first we need to become more knowledgeable ourselves."

Computers, Cameron believes, will be particularly important for reaching new audiences, especially in urban areas.

Mrozek point out that we are "seeing many technologies coming together to greatly increase our capabilities. It's a really exciting, but challenging, time."

From the county perspective, Stanford agrees that "Computers offer us a lot of opportunities. We can't afford not to move as quickly as possible." ▲

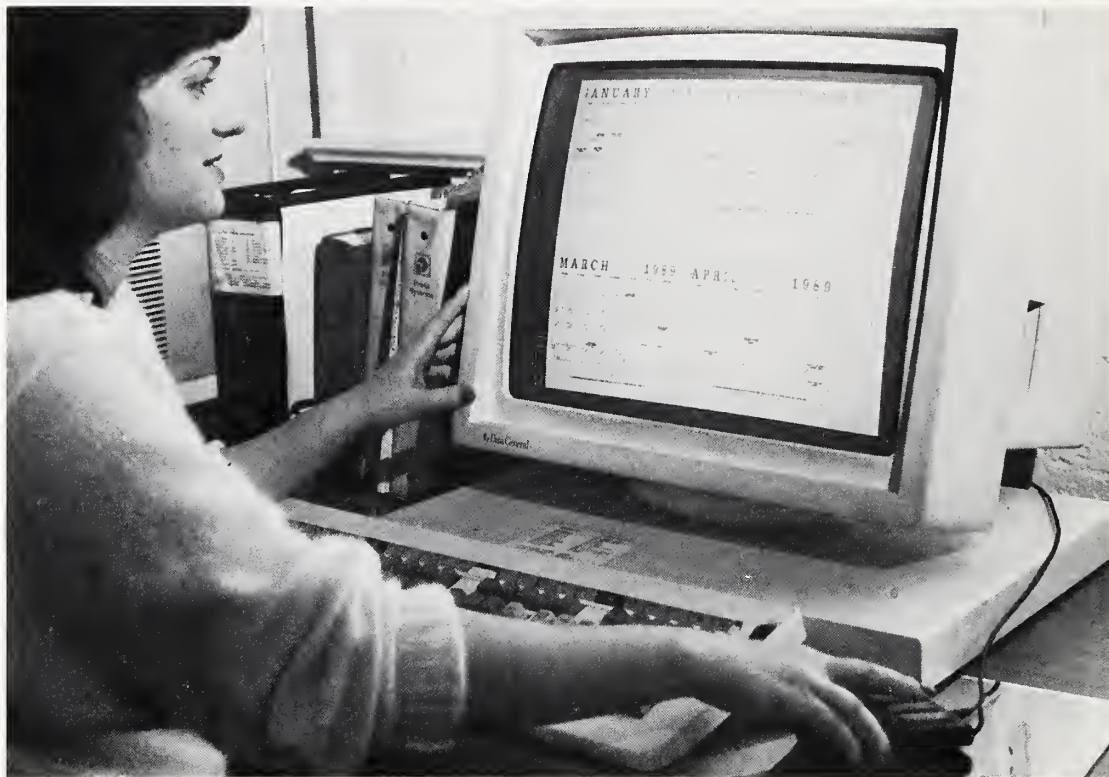
Thomas J. Hoban
Extension Sociology
Specialist,
Department of
Sociology and
Anthropology,
North Carolina State
University, Raleigh

When Electronic Publishing Pays Off

34 Extension Review

Colleen Kelly Clark
Extension Head,
Office of Information
and Publications,
University of Maryland,
College Park

Opposite: The Office of Information and Publications at Maryland Extension used its integrated publishing system to create this 75th Cooperative Extension Anniversary Calendar cover with its February page and historical photograph. This page: Julie Perrotta, senior computer operator at Maryland Extension, prepares the Anniversary Calendar for production on the page makeup terminal.



As the state sweltered in record heat and crops cooked in the fields, Maryland Extension published almost daily bulletins and factsheets advising farmers on ways to weather the drought of 1988.

An integrated publishing system from Penta Systems International, Inc. and Data General enabled Extension's Office of Information and Publications to quickly send out a steady stream of vital information from specialists and researchers throughout the state.

Reaching Every Citizen

The goal of the Office of Information and Publications is to provide educational information and delivery systems that reach every Maryland citizen. As a first step in meeting this challenge, the university installed

a highly flexible and versatile integrated publishing system in 1987. Grant income provided the down payment on a 5-year loan, and printing income pays the annual loan payment.

Maryland selected the Penta system because it provided a departmental network including individual equipment and software for various job functions—ranging from editing and typesetting to word processing, office management, and telecommunications. The system could drive the department's Allied L300 laser typewriter. With capability for 250 simultaneous processes without loss of speed, the new system has future port and memory expandability. Use of the system allows Information and Publications Staff to expand their services, improve the quality of printed documents, and free them from repetitive jobs for creative design work.

Since early 1987, a Data General MV/7800 DC running DG's Comprehensive Electronic office (CEO) and Penta software has

helped the office meet its goals. In fact, in the first 18 months the system was installed, the amount of publication work produced by the office increased 60 percent.

Penta's editorial and publishing software provides the university's editors and publications specialists with an array of electronic tools that help them transform articles written by Extension specialists and scientists into publications that can be used by farmers, gardeners, agribusiness people, 4-H club members, consumers, and members of community groups.

The Process

The articles sent to the Office of Information arrive as "electronic manuscripts." The vast majority are created on IBM PC's using WordPerfect. The manuscripts are transferred into the publishing system by Penta's communications software.

Articles are also developed by the staff writers who work at CEO terminals, either DG 210's or 416's. When they are ready to be typeset, these manuscripts flow directly to the composition department through the CEO Publishing Interface.

Publication editors mark the copy while editing it—indicating heads, subheads, bold and italics, etc.—with video attributes and established formats.

Once edited, an article is printed out on a laser printer. The author receives a copy of the article which shows side by side the edited version and the original manuscript. This allows the authors to easily compare the two versions and check for accuracy.

Once approved by the author, the document is prepared in final form for output on the L300 typesetter.

Penta software handles even the most sophisticated layouts, including multi-column tables, word wraps, multiple typefaces, and mathematical and scientific formulas.

The new integrated publishing system has enabled the Office of Information to receive, edit, and produce a fully typeset article in one day. Since the printing is done by the Office's Agricultural Duplicating Service, documents can quickly be turned around and sent across the state.

Easy Access

The Office of Information's faculty, associate staff, classified employees, and part-time student workers and interns have access to 12 CEO and 5 Saturn terminals, two laser printers, and one letter-quality printer.

Telephone messages, memos, meeting announcements all reside on CEO, not on paper. With CEO's electronic mail, the office was able to eliminate one support position. This savings

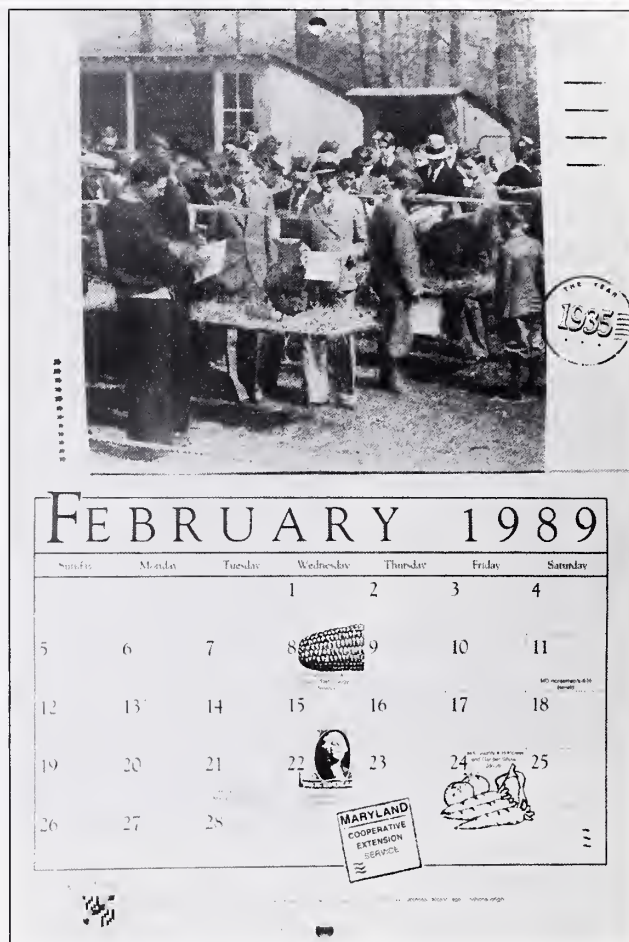
was applied to maintenance contracts and security for the system.

CEO is used for correspondence as well as the marketing and direct mail lists for media and special events. Writers can use the public drawer capability to merge stories for a press packet. The office also uses CEO data tables for its news and clipping service logs, publications, production and video resource center tracking. A "Present" business graphics package allows the user to prepare special reports creating pie charts and bar graphs from data table information.

CEO provides the telecommunications link that enables the university to electronically send press releases to wire services, newspapers, and radio and television stations throughout Maryland and bordering states, and to take advantage of national databases and networks.

The Office of Information subscribes to Dialcom, Farm Bureau's ACRES, and other information services. These services provide a daily early morning synopsis of all the agriculture-related news stories that have appeared within the last 24 hours in papers across the country and access to Dialcom's SATCAL and video database. News writers are also being trained to use the DG One laptop portable computer so they can work at remote locations.

With any new technology there are changes and unforeseen complications. The entire staff spent a profitable week at Data General's training center becoming "computer literate." However, systems management continues to be an additional time factor. The department hired a computer science graduate student and upgraded the two phototypeset-



ter positions, but the largest responsibility continues to be on the Publications Manager Anne McLaughlin.

Future

Information technology continues to advance, and as the consumer buys new digital systems for the home, Extension must gear up for new delivery systems and opportunities. The Office of Information also has purchased state-of-the-art SVHS video production equipment for its educational video and teleconferencing section.

The staff is also investigating a computer graphics system for the designers, and interactive video public information kiosks. Technology is a tremendous challenge — knowing where to sink time and resources. However, our first major investment, the electronic publishing system, has really paid off! ▲

Touch Video At Governor's Conference

36 Extension Review

Colleen Kelly Clark
Extension Head,
Office of Information
And Publications,
University of Maryland,
College Park

Tom Tate (left), program analyst, Extension Service, USDA, discusses new Touch Video with prospective user at the Governor's Conference On The Future Of Maryland Agriculture in Baltimore. After the Governor's Conference, the kiosk with its public information delivery system was used at various national conferences and at USDA headquarters in Washington, D.C.



Attendees at the Governor's Conference On The Future Of Maryland Agriculture in Baltimore last Fall had an opportunity to see—and try—an information tool that has the potential to educate a growing audience of Marylanders about various consumer and agriculture-related issues. Called Touch Video, this tool allows urban and suburban residents to learn at their own pace about nutrition, horticulture, conservation, Maryland agriculture, and food products at such diverse locations as libraries and shopping malls.

"Interactive video holds great promise as a public information delivery system for Maryland citizens," says Craig S. Oliver, director of the University of Maryland Cooperative Extension Service. "For example, it can provide a directory of Extension state services and county programs as well as pertinent research-based information from the University. While increasing the availability of Extension assistance to the Maryland community, it may reduce routine telephone requests to

county offices. Touch Video users can get answers to their questions both on the screen and on paper to take home."

Presentation

Housed in public service kiosks that can be stationed permanently at selected locations or moved for special events, interactive video systems present information using narration, music, still and motion photography, graphics, and text. Users can make choices and have questions answered by simply touching the screen. An attached printer allows them to print out the answers.

The kiosk on display at the Governor's Conference is one of several prototypes being evaluated by Extension's Office of Information and Publications. It is sponsored by the Maryland Cooperative Extension Service and the Maryland Department of Agriculture and Extension Service, Communication Information and Technology staff.

In addition to the interactive video system, the six-sided kiosk features a VCR and playback monitor showing a series of videotapes on Extension and 4-H initiatives, the Governor's Maryland with Pride campaign, and the Chesapeake Bay. The remaining four sides display posters focusing on Maryland Department of Agriculture Extension, the Maryland Agricultural Experiment Station, and the University of Maryland Colleges of Agriculture and Life Sciences at College Park.

After the Governor's Conference the kiosk was used at various national conferences and at USDA headquarters in Washington, D.C. Other state leaders in Touch Video technology are Virginia, South Carolina, Maine, Wisconsin, and New Mexico.

For more information contact:
Craig S. Oliver
Director,
Cooperative Extension Service,
University of Maryland
Phone: (301) 454-3742
Colleen K. Clark (301) 454-3621
Pamela B. Townsend,
(301) 454-3622

The Pacific Basin is the area of the Pacific Ocean bounded on the east by the United States, on the west by the Philippines and Japan, on the north by the Aleutian Islands, and on the south by Australia and New Zealand.

In this basin are five American-affiliated island groups, each of which has a land-grant institution. The island groups are Hawaii; American Samoa and Guam, both unincorporated U.S. territories; the Freely Associated States of Micronesia, a union of three newly independent nations—the Federated States of Micronesia (Pohnpei, Truk, Yap, and Kosrae), the Marshall Islands and the Republic of Belau—all in close association with the United States; and the northern Mariana Islands, a commonwealth state in association with the United States.

The islands are far from the U.S. mainland, and many of them are far from each other. Hawaii is about 2,500 miles west of California; American Samoa is more than 2,000 miles south of Hawaii; and Belau is 4,500 miles west of Hawaii. The population of the Pacific Basin is only 1,237,000, of which 965,000 are in Hawaii.

Cooperation

Administrators in the five land-grant institutions in the Pacific Basin realized that, because of their limited resources, they could more effectively promote agricultural development as a group. In 1987, the directors met to form the Agricultural Development in the American Pacific Project (ADAPP).

Among the task forces formed to guide the ADAPP was what has become known as the Communications and Databases Action Group (CDAG). Consisting of one member from each institution, plus a chairperson, the CDAG is responsible for:

- Enhancing electronic mail and document facsimile capabilities not only between the five

institutions but also between the institutions and local and national administrative agencies;

- Organizing a computer database development unit at each institution; and

- Coordinating and supporting computer database development.

Selecting Equipment

The CDAG is installing database development and telecommunications computers at each institution. An analysis of cost-effectiveness, compatibility with other U.S. systems, and the amount of agricultural software available led to the selection of IBM-compatible computers that use the MS-DOS operating system.

The telecommunications computer has facsimile transmission capability and will be set up with computer bulletin board software to handle messaging, file transfers, and conferencing.

The database computer is equipped with state-of-the-art color graphics, a high-capacity hard disk drive, a graphics and text recognition scanner, word processing, desktop publishing software, and a laser printer.

Choosing Software

In its attempt to select the best programs for inclusion in the system, the CDAG reviews both commercially produced and university produced database software. Several packages have been chosen for use in the development of bibliographic and human resources databases. For example, a videotex agricultural information system developed at the University of Florida (known in Florida as FAIRS) is being adapted to the needs of the Pacific institutions.

CDAG looks at several factors as it selects software for the system: ease of use of the software; flexibility of the software to be adapted for Pacific institution needs; compatibility with the hardware and with other



software; portability of database information to traditional print and visual media; and cross-compatibility, wherever possible, with Apple Macintosh computers.

Enhanced Communication

All computers and an enhanced telecommunications link were scheduled to be in place by mid-fall 1988. Database development has begun; several databases will be nearing completion later this year. The coming year should see further advances in the use of electronic technology, such as possible introduction of laptop computers and graphics production equipment.

The Pacific Basin islands have much to offer each other through information transfer. They also have much to offer the U.S. mainland, especially in the area of tropical crop production. The land-grant institutions of the Pacific Basin are looking forward to an enhanced information and communication exchange with each other and with their counterparts throughout the land-grant system. ▲

I. Scott Campbell
*Extension Assistant
Crop Management
Specialist,
College of Tropical
Agriculture And Human
Resources,
University of Hawaii at
Manoa*

Nutrition—On Tap With DAP

38 Extension Review



Beth Branthaver
National Program
Leader,
Food Marketing,
Extension Service, USDA
And
Alyson L. Escobar
Nutritionist,
Human Nutrition
Information Service,
USDA

People are increasingly interested in analyzing their personal eating habits, and advances in computer technology are making this kind of analysis easier and more accurate. Feedback from computerized dietary analysis allows educators to personalize nutrition education programs and to more easily set and evaluate specific, measurable goals.

Though both Extension and its clients can benefit from dietary analysis software, use of these programs raises some concerns. Since consumers are likely to be impressed by the appearance of the printout, they may give undue credibility to the data. They may find the printout hard to understand or they may draw unwarranted conclusions from it.

As with any educational method, computerized dietary analyses are more effective with some audiences and settings than with others. In addition, there are wide variations in the features and capabilities of software programs.

USDA Software

USDA's Dietary Analysis Program (USDA DAP) is a software package developed by the Human Nutrition Information Service in cooperation with the Cooperative Extension Service. Designed primarily as an educational tool for Extension agents, it was pilot tested by Extension in Maryland, Tennessee, Illinois, and Oregon.

By entering food consumption data covering a period of 3 days or less, consumers can get information on their intake of 28 nutrients and food components. A user-friendly menu-entry approach allows consumers to use the program with a minimum of staff involvement.

Program Output

Information that users can get from USDA DAP includes:

- . A complete listing of foods and quantities reported;
- . The percentage of Recommended Dietary Allowances (RDA) for 15 nutrients;
- . The percentage of calories from protein, carbohydrates, fat, saturated fatty acids, and alcohol;
- . Estimated Safe and Adequate Daily Dietary Intakes of sodium, potassium, and copper; and
- . Dietary totals for selected nutrients and food components such as fiber and cholesterol.

The program also will produce data for any single nutrient or food component of interest to the user. Interpretive materials that accompany the program explain the nutrient standards, make general dietary recommendations, and provide guidelines for making healthier food choices.

DAP Database

The USDA DAP database consists of nutrient values for about 850 commonly used foods. Nutrient values—the most up-to-date available—were derived from the USDA nutrient database for the 1987-88 Nationwide Food Consumption Survey. Values were estimated for foods on which no data were available. The program allows for easy updating of values as new data become available.

Special Features

The program contains many special features that enhance its use as an educational tool. The menu-entry approach allows consumers to enter foods for analysis without looking up code numbers. Professionals may select a direct-entry approach that uses codes.

Users may change the food and quantity entries and then re-analyze the data to see the effect that small changes have on total dietary intakes. Users may store diet records in computer files, then re-analyze or make changes later.

Menu entry is facilitated by the classification of foods into 13 groups. Users can find the food of their choice by moving quickly through increasingly specific menu screens.

Serving sizes, customized for individual foods, are listed in common household measures. The program stores nutrient totals and user information in computer data files. Extension can use these

Opposite and this page: Pilot testing by Extension has indicated that USDA's Dietary Analysis Program (DAP) can be used to teach Extension clients how to make healthy food choices. Here, the menu-entry approach allows consumers to enter foods for analysis. The USDA DAP database consists of nutrient values for about 850 commonly used foods.

files with other software to perform special data analyses such as assessing diets of clientele before and after educational intervention.

Evaluating Potential Uses

Extension received USDA funds to identify and evaluate uses of USDA DAP in Extension programs and activities. Eight States are participating.

At Colorado State University, Patricia Kendall, Extension food and nutrition specialist, is evaluating the use of USDA DAP with Extension homemakers, 4-H youth, Elderhostel program participants, and adults attending Healthy Heart classes. The evaluation will focus on how the program changes nutrition knowledge, attitudes, and behavior, and it will identify the most useful and least useful program features for these audiences.

At the University of Connecticut, Jean Ann Anliker, Extension nutrition specialist, will compare USDA DAP use in single-session versus multiple-session programs and will evaluate its effectiveness with EFNEP participants and as part of a correspondence course for day care providers.

The project at the University of Delaware involves comparing USDA DAP to other methods used to assess dietary changes in EFNEP audiences. Sue Snider, Extension food and nutrition specialist and principal investigator, will use USDA DAP as part of a workshop series on fat and cholesterol and with 4-H youth enrolled in foods projects.

At Mississippi State University, Melissa J. Mixon, Extension human nutrition specialist, will determine whether USDA DAP is effective in weight-loss programs, which usually incorporate lifestyle changes and behavior modification as well as dietary guidance. The project will evaluate the impact of USDA DAP on changes in nutrition knowledge, percent of weight loss, and dietary behavior changes.

At Rutgers University, New Jersey, Audrey C. Burkart, Extension food and nutrition specialist, will compare USDA DAP to the Nutrient Profile Program as an educational tool with adults ages 19 to 40. She also will compare the effectiveness of the program used alone to its effectiveness when accompanied by professional guidance or printed materials.

At Cornell University, New York, Ardyth Gillespie, Department Extension leader, Division of Nutrition Sciences, will coordinate an assessment of the impact of USDA DAP on the behavior of participants in a multi-session diet and heart disease program.

At North Carolina State University, Carolyn Lackey, Extension food and nutrition specialist, will use USDA DAP as part of a rural health screening program conducted with the state's Center for Health Promotion and Disease Prevention.



At Ohio State University, Alma Saddam, Extension nutrition specialist, will evaluate the use of USDA DAP with several traditional Extension audiences, including EFNEP, 4-H youth, weight control groups, the elderly, and pregnant women. The educational impact will be compared to that of more traditional program delivery methods.

Nationwide Use

USDA released USDA DAP for nationwide use as an Extension educational tool. Copies are available for purchase from the National Technical Information Service at a cost of \$60.

To order copies call:

(703) 487-4807 and specify Accession Number PB89-138275 and the type of diskettes needed. ▲

Help At Your Fingertips!

40 Extension Review

Mary Harvey
Extension Information
Coordinator,
Michigan State
University,
East Lansing



Opposite: A mother and son enjoy the computer interaction at a day-long school computer workshop called "Kids, Parents, And Computers." Extension home economics at Michigan State University has developed comprehensive databases on foods and nutrition and home maintenance. This page: Irene Hathaway (left), Extension specialist in resource management, explains the fine points of the computer forms for the Dollar Watch Program with a client.

It's 9:30 a.m., and you've already had three calls on home canning, someone wanted to know about repairing screens, and another caller asked how many zucchini plants to put in a 4- by 6-foot garden.

What if someone offered you computer disks that would access and print out answers to hundreds of questions on growing, canning, or preserving fruits and vegetables, and on home maintenance?

Imagine, for example, typing the word "zucchini" and getting a menu that lets you access categories such as growing, preserving, or recipes. Think of having the new USDA canning guidelines at your fingertips. Think of the desk and file cabinet space you could clear out.

Now imagine training a secretary or a volunteer to field these routine calls! Or how about

having a computer access terminal right in the front office where visitors could call up and print their own information.

Disks Available

The best part of this scenario is that these disks are available to you. Extension at Michigan State University (MSU) has developed and made available two comprehensive databases—one on foods and nutrition; the other on home maintenance.

The MSU Extension Home Economics Program has a long and successful track record of developing and using computer programs. The potential of microcomputers as retrieval systems was recognized and work was begun on developing the two bases to allow county agents to more efficiently generate and provide specialized information to clients.

Successful Uses

These databases can also relieve agents of the necessity to answer routine and repetitive questions. A volunteer can be trained in the use of the databases and then answer these calls.

Both databases have a common interface, which makes it easy for field staff members to operate them. The database program also allows you to import all text into your word processing package.

In the early 1980's when the two programs were being produced and used, staff also were learning to become computer literate. From training staff members, it was only a small step to begin to train clients.

A first Michigan effort in that arena was entitled "Kids, Parents and Computers." The objectives of this program were twofold—to teach some technical skills to kids, aged 9 to 14, and their

parents, and to foster positive interaction between the kids and their parents about the topic of computers.

Daylong workshops were held in school computer laboratories. These began with a math game that served as an icebreaker and helped the parent and child get used to the computer keyboard. The second exercise involved writing, editing, and printing a letter—often to the child's grandparents. The parents viewed a Nova program on the computer language Logo and then parents and children experimented with the Logo program and other software packages.

Other Training

Another successful training venture was undertaken with the Michigan Association of Extension Homemakers (MAEH). Training helped MAEH members acquire new skills and strengthen the organization through improved recordkeeping, mailing list management and registration.

Several county offices participated, sending their home economist and two MAEH members to the training sessions.

In 1986, the Michigan Home Economics program developed a home maintenance laser disk that randomly accessed video on how to make simple home repairs. The home maintenance laser disk was displayed at a number of county fairs two summers ago.

The MSU Home Economics program continues to explore computer-assisted programing and education. The Family Data Project, in the east central region, expanded throughout Michigan last October. This project will, in effect, make each home economist the family data expert in the county, and involves using demographic information from a central database and computer-



generated reports and graphs to target programs to fit specific audiences in the county.

For more information on the Family Data Project or the food preservation or home maintenance databases, contact:

Mary Lou McPherson
103 Human Ecology Building,
Michigan State University,
East Lansing, Michigan 48824
Phone: (517) 353-9353. ▲

Extension Videotape Network— An Update

42 Extension Review

Charlotte Travieso
Former Extension
Staff Leader,
Management Systems,
Extension Service, USDA

A review of the Extension Video Network's (EVN) activities reveals that in this short period it has already made significant progress.

When Cooperative Extension System (CES) information technology specialists created EVN they determined that the mission of EVN would be to:

- . Develop criteria for the review and distribution of Extension-produced videotapes;

- . Coordinate videotape contacts through the Cooperative Extension System;

- . Disseminate information on high-quality, general-use tapes;

- . Negotiate tape exchanges and cooperative production of tapes; and

- . Explore videotape markets.

. Accomplishments

In its first year, through regular telephone contact and with only the personal efforts of the involved members, EVN has accomplished a number of tasks.

- . *Establishing Contacts*—EVN asked each state Extension Service to appoint a videotape contact person; these names and addresses make up the EVN mailing list.

- . *Review Of Tapes*—EVN members developed criteria for reviewing tapes and assigning them one- to four-star ratings. EVN suggests that Extension producers who submit tapes to ES-USDA for review have them reviewed first "at home" for content by a subject-matter peer using the EVN rating form. ES-USDA then obtains an objective quality review. In the first year, more than 75 tapes were submitted for review.

- . *Preview Broadcast*—In cooperation with the Iowa Extension Service, EVN produced a preview tape to help states select videotapes. EVN chose 15 tapes that had received three- or four-star ratings for general use, content, and production quality. James L. Hamilton, Head, Extension Communications, at Iowa State University, pulled highlights into a 50-minute show that included information. In April, the preview was broadcast from the Iowa State campus.

- . *Catalog And Leaflet*—ES-USDA has assembled a catalog of three- and four-star rated tapes. It includes the names of CES videotape contacts and lists tapes by state, with ratings and reviewer comments. A companion leaflet includes a brief description of EVN.

- . *Technology Conference Booth*—EVN hosted a booth at the 1988 Extension Technology Conference. All of the EVN-reviewed tapes were available for preview, and at least 10 institutions signed up to borrow the preview tape. The supply of catalogs and leaflets was depleted.

- . *Cost-Sharing*—Even before the birth of EVN, ES-USDA had been in the business of cost-sharing the production and distribution of Extension videotapes. The EVN group fully supports this objective.

. For The Future

Videocassette recorders are becoming as common as television sets in both urban and rural homes. The videocassette lends itself well to delivery of Extension programs and information. EVN has plans to foster the continued use of videotapes as an educational tool.

- . *Outreach And Outside Review*—The need for Extension-type videotapes is strong, both here and abroad. By using outside sources for tape review, EVN also alerts marketing sources to the existence of some excellent tapes.

- . *NAL Acquisition*—EVN has met with National Agricultural Library officials to discuss the idea of supplying Extension videotapes to the library for storage and checkout and for listing in the library's AGRICOLA database.

- . *Satellite Preview Broadcasts*—EVN has had satellite preview broadcasts that showed highlights from some of the best available Extension videotapes. The broadcasts are publicized to groups outside the Extension system, such as state departments of education, as well as internally.

- . *Shared Production*—In addition to the ES-USDA cost-sharing program, EVN members are looking for ways to support multistate tape production. Tape production can be costly; networking can reduce costs, save time, and result in a higher quality product.

. EVN Contact

If you have ideas or comments about the Extension Video Network contact Cathy Selberg, ES-USDA, by calling (202)447-6084 or by using Dialcom AGS 082. ▲

NOTE: In the article, *When Counties Take The Initiative* (page 14, Fall 1988 issue), Faribault County Extension, one of the three major participating counties in the rural Minnesota project known as WATER (Water-Quality Assessment Through Education and Research), was inadvertently omitted.

High-Tech War Against Plant Diseases

Extension Review



Minnesota agricultural specialists are employing such high tech weapons as artificial intelligence "keys," interactive video, and satellite teleconferencing in their war against plant diseases.

Extension Plant Pathologist Richard Meronuck, University of Minnesota, has developed an artificial intelligence key using a computer and color video monitor that is effective against bean diseases.

"If you see bean leaves in your field or garden that are wilting and spotted," Meronuck explains, "you pick a few, take them to a home or office computer equipped with my program, then spend just 5 minutes to diagnose the specific bronzing disease. The program can be adapted for other crops."

The program is ready for use in classroom and pest management training, and by county agents. "We use digitized colored pictures from plant disease bulletins for the video. And they can be updated very fast as new information becomes available," he adds.

User Friendly

"The program is very user friendly. If you make a mistake, you can start over by using just one key on the computer," Meronuck points out. "It is also relatively inexpensive. If you have an IBM computer with a hard disk and the right kind of

color monitor, you can install the color cards to run the program. Purchase of the additional hardware costs about \$3,500 including the software, color monitor, and color and digitizing cards."

Meronuck sees the program being expanded to diagnose diseases in other crops, plus insect and other plant pest problems. "The 'shell' of the program," he says, "will be available for other specialists to use in developing specific programs."

The program currently handles 15 dry edible bean diseases. With the bronzing disease as an example, here is how the program works:

The computer screen asks if lesions are present on the plant. The user inputs "Y" for "yes." Are the plants wilting? Once again, the user inputs "Y." Are certain plants uniformly bronzed or brown? A third "Y" response informs the user of a possible answer: bronzing.

During this program, the color monitor displays a leaf that has bronzing caused by sunlight and air pollution. It is on the left of the monitor, next to a normal leaf on the right half of the screen. The database part of the program (being developed) can inform the user of the latest information on available controls, the disease organism's life cycle, susceptible crops, and other data.

Training For Applicators

Meronuck and other specialists are also developing an interactive video program to help train private pesticide applicators. The program is being used in three Minnesota counties on a pilot basis. "Minnesota has 35,000 to 40,000 private pesticide applicators who need to be trained every 5 years," Meronuck says. "We see the interactive video segment as another training option, in addition to classroom instruction or a home study course."

Stored grain management is another program where new communications technology is being used. Early in 1988, the country's first stored grain management videoconference was held, a cooperative effort of the Extension Services of Oklahoma, Minnesota, Kentucky, and Indiana.

The teleconference was available to anyone able to receive satellite communications. Presentations included videotaped, onfarm demonstrations. Specialists from the four states answered telephone questions from the audience. Many receiving sites had local experts—like county agents—on hand to respond to questions.

"There were questions from all corners of the country," says Philip Harein, Extension entomologist at Minnesota. The program originated at Oklahoma State University.

"Improper stored grain management is a big problem," Harein states. He estimates that stored grain insect losses in 1988—in just Minnesota—at over \$100 million.

"Quality of our stored grain must be improved or we will suffer competitively. We need a national push in this area," Harein says.

Everyone believes the national stored grain videoconference was a good beginning. ▲

Jack Sperbeck
*Extension
Communications
Specialist,
Communication
Resources,
University of
Minnesota, St. Paul*

Richard Meronuck, Extension plant pathologist at the University of Minnesota, examines a bean leaf in his laboratory. He and other specialists there are using artificial intelligence keys, interactive video, and satellite teleconferencing to help control plant diseases and pest problems.

Dual-Language Videos— Expanding The Outreach

44 Extension Review

Ellen Ritter
*Extension
Communications
Specialist,
Texas A&M University,
College Station*

At an Austin, Texas, housing project a group of women, men, and children crowded around the television set in a small community room to see a videocassette called "Planner Lo Que Come" ("Planning What You Eat").

In Centerville, Texas (population 900), 40 women came from their jobs in downtown banks, offices, and stores to the village meeting room for an Extension "lunch and learn" series.

Although separated by distance, age, ethnic background, and language, these people and thousands like them have been learning about nutrition from the same resource—a video series produced by the Texas Agricultural Extension Service.

The Family Nutrition Series

The Family Nutrition video project grew out of continuing discussions among Extension home economics and communications faculty at Texas A&M University and Extension agents in the field. "For some time our goal had been to develop innovative teaching resources which would expand the outreach of the EFNEP program and support our efforts to teach basic nutrition to more limited income and young families across the state," says Jennie Kitching, assistant director for home economics.

The result was production in 1987 of a "Family Nutrition" video series in English and Spanish.

To help market the Extension Service as a credible source of nutrition information, several programs present a county agent as the expert conducting a food demonstration.

Several programs depict people of different ages, sexes, and racial/ethnic backgrounds to reach diverse audiences. Other videos were designed for specific target groups, such as young mothers in "Healthy Eating For Young Children."

Volunteer Talent

Locations included a county Extension office, demonstration kitchen, homes, offices, a supermarket, and outdoor sites.

Nutrition De La Familia

Of the 21 percent of the Texas population that is Hispanic, vast numbers are bilingual. However, a significant proportion of Hispanics speak only Spanish, and that number is highest among recent immigrants and low-income audiences. In addition, those who speak Spanish do not necessarily read Spanish. Those who speak both languages may read neither, especially if their only education was 2 to 3 years of elementary school in Mexico. Thus, effectively reaching Hispanic audiences, including the 69 percent of Texas' EFNEP clientele which is Hispanic, often requires oral teaching in Spanish.

To accommodate dual-language production of the Family Nutrition series without incurring prohibitive costs, we planned programs to contain mostly narration.

After a year of use in the field, reports indicate that the Family Nutrition Video series has successfully supported Extension teaching. For Texas EFNEP staff, the series has become a standard teaching resource.

The videos also have given county Extension home economists opportunities to teach low-income families in areas without EFNEP units. Dee Money, Ector County home economist in Midland, Texas is a prime example. Economist Money made the videos available to organizations working with limited-income families in economically distressed west Texas. Under her leadership they formed the Permian Basin Nutrition Council. It includes 17 member organizations, such as Meals On Wheels, a food bank, church outreach groups, the Health Department, medical centers, pre-natal clinics, and senior citizen centers. Through the Food Bank, this educational outreach has been extended to 105 agencies in 22 counties.

Joan Gillespie is a Webb County Extension agent in Laredo, Texas, where, like her, 93 percent of the population is bilingual. She has used both the English and Spanish videos in teaching programs at worksites, hospitals, senior citizens homes, the health department, and the National Guard.

The video series has also been used extensively for other than limited-income audiences. Throughout Texas, county Extension home economists have shown the programs to numerous health-nutrition groups.

In rural Leon County, for example, agent Margaret Caldwell has integrated some of the programs into nutrition workshops for working women and for weight control groups. Other agents report using them as resources for teaching new parents, dual-career families, senior citizens, and Extension Homemakers.

In urban Tarrant County, Extension agent Jalyn Burkett uses the videos to enhance Extension's community profile as a provider of nutrition information. She set up a loan system for the videos and publicized their availability in the media.

The Texas Family Nutrition series exemplifies how Extension has used such technology to reach and teach diverse audiences. ▲

Windows Of Access

Extension Review 24

"How can I find out more about a chemical called DCD?" a farmer asks a local agricultural Extension agent. Traditionally, the agent will seek an answer from a state or regional Extension agronomist. Today, computer technology offers the agent access to another option—bibliographic databases.

Bibliographic databases are computer files of references to journal articles, reports, books, and other sources. Ten years ago they were searched only by librarians or other information specialists. Recently, however, the companies who sell access to these databases have developed menu-driven, user-friendly software that makes searching easy enough for anyone.

A great number of bibliographic databases contain information of use to Extension field staff; the following is only a sample:

AGRICOLA—This National Agricultural Library database contains information on agriculture and related subjects, including agricultural economics and rural sociology, animal science, agricultural engineering, entomology, food and nutrition, forestry, home economics, and resource management.

CAB(A)—A comprehensive database of worldwide agricultural information produced by CAB(A) International. Its many component databases include Nutrition Abstracts, World Agricultural Economics, Rural Sociology Abstracts, Field Crop Abstracts, and Forestry Abstracts.

BIOSIS—The BIOSIS database provides easy access to biological and medical information gathered from government documents, journals, and books, as well as hard-to-find symposiums and proceedings. It is produced by BioSciences Information Services.

CRIS—Provides coverage of the current research projects of the USDA, State Agricultural Experi-

ment Stations, and other cooperating institutions.

Agribusiness USA—Provides a centralized resource for timely, comprehensive information on all facets of the business of agriculture.

NTIS—The National Technical Information Service provides multidisciplinary coverage of unclassified technical reports generated by U.S. government-sponsored research.

Enviroline—Provides interdisciplinary coverage of the scientific, technical, and socioeconomic aspects of the environmental literature.

ERIC—This database of educational materials collected by the Educational Resources Information Center of the U.S. Department of Education contains both journal articles and unpublished reports dealing with education and curriculum materials.

Magazine Index—Indexes more than 400 popular American and Canadian magazines; all articles, news reports, editorials on major issues, product evaluations, biographical pieces, short stories, poetry, recipes, and reviews are included.

Family Resources—Combines material from the National Council on Family Relations with a file called Inventory of Marriage and Family Literature. Covers psychological and sociological literature pertaining to the family and related fields, as well as information on programs, services, and experts in the field.

Telecommunications

Databases are accessible through many vendors, two of which are BRS (Bibliographic Retrieval Service) and DIALOG.

To connect with a database system, a user must have a microcomputer with a modem and telecommunications software.

Some bibliographic databases are also available on compact disks (CD-ROM.) Heavy users of particular databases might consider purchasing the information in this form.

Searching The Databases

A carefully planned strategy is necessary for searching a database effectively. The first step is to choose the most appropriate database(s). Then the question must be broken down into searchable components, and keywords must be assigned to those components.

The finer details of searching cannot be covered here. Documentation from the vendors is helpful, but some instruction from an experienced searcher, plus a lot of practice, is the only way to become a skilled database user.

Document Delivery

The final step is to obtain copies of the text of the articles you want to read. You have three options: (1) Many public libraries provide interlibrary loan service through which they can obtain materials not owned locally. (2) Document delivery services are also available from state land-grant university libraries, many of which are installing computerized catalogs so their holdings can be checked remotely. (3) Commercial document delivery services specialize in providing documents quickly.

A Valuable Tool

Bibliographic databases are a valuable addition to Extension's repertoire. With this tool, Extension staff members will be better equipped to gather the information they need and to provide continued quality service to their clients. ▲

Mary Ochs
Document Delivery
Librarian,
Albert R. Mann Library
Cornell University,
Ithaca, New York

BITNET/INTERNET

46 Extension Review

Margaret P. Ezell
*Former Extension
Southern Regional
Computer
Coordinator,
University of Georgia,
Athens*

Fifty-eight percent of all business telephone calls fail to reach the person being called. Because Extension personnel do much of their work away from the office, they are particularly subject to what is often known as "telephone tag."

A growing percentage of internal Extension communication is being conducted through electronic mail (e-mail) rather than by telephone and U.S. mail. Many states in the Southern Region have extensive e-mail networks that connect all Extension staff members within the state.

International Network

In an attempt to find ways to communicate electronically with associates in other states, many have been surprised to find that they have access to a little-known and under-utilized resource known as BITNET or INTERNET, an international electronic mail network. Through its gateways with other networks, it permits communication with almost all universities and research centers here and abroad.

Diane Relf, Extension horticulture specialist, Virginia Tech, uses Virginia's e-mail system to distribute press releases, monthly notes, and a question-and-answer series geared to home gardeners. She shares her work with other horticulture specialists around the country via the Virginia system's connection to BITNET/INTERNET.

To ease the work involved in distributing multiple copies of the same information to numerous recipients, most e-mail systems have a facility for setting up distribution lists.

Advantages And Disadvantages

E-mail has several advantages: The two parties need not be in at the same time; messages can be received at a time of the recipient's choice, rather than constitut-

ing multiple work interruptions; messages can be distributed to multiple addresses; the system is well-suited for limited-size text documents; e-mail may reduce telephone and copy machine usage and interoffice memos; and with a portable computer, users can check messages from almost anywhere in the world.

E-mail also has some disadvantages: It is awkward, semi-formal, and does not reveal "body language" or voice inflection; it does not deal well with diagrams or extremely long documents; and it has a limited directory for addressees not located at the sender's institution.

Access To The Network

To find out whether your university is connected to BITNET/INTERNET, contact your state Extension computer coordinator or university computer center. Access to the network at most land-grant universities requires a university mainframe computer account or a mailbox on Extension's e-mail system, a personal computer, communications software, a modem, and a phone line.

The only additional cost may be an account with the university's mainframe and the cost of the call to the mainframe. At the University of Georgia, for example, a mailbox on the system is \$6.84 per month. There is no additional cost to send electronic mail anywhere in the world.

How The System Works

Major U.S. universities and research centers set up the network several years ago with the help of IBM. Each participating university has a phone connection to other institutions and must be willing to pass messages through their system.

Eventually, every campus and Extension phone directory will include e-mail addresses. Within 5 years, many Extension professionals will be using two forms of electronic mail—text and voice.

A network of Extension electronic bulletin boards will act as holding sites for information and will route messages to corresponding bulletin boards nationwide. Extension professionals will be able to communicate directly with their colleagues at home and abroad without needing specialized computer skills. They will be able to choose from a wide array of special interest groups. "Personal publishing" will bring in a daily packet of information gathered automatically on topics preselected by the recipient.

Margaret Ezell, former Southern Regional computer coordinator, has compiled a national Extension BITNET/INTERNET directory that lists nearly 2,000 Extension staff members, university departments, and county offices from 37 states and two foreign countries. This BITNET/INTERNET directory can only be obtained as a dBase file or a text file via BITNET and not by mail. The directory has separate listings for Agricultural Research Service personnel, climatologists, and other special interest groups.

Important BITNET/INTERNET contacts are:
BITNET: MEZELL@UGA

Tom Mincemoyer
Manager,
Extension Computer Division,
Agricultural Administration
Building,
Pennsylvania State University,
University Park, Pennsylvania
16802
Phone: (814)863-3436
BITNET:
MINCEMOYERTO@PSUPEN

Jerry Lambert
Computer Coordinator,
115 McAdams Hall,
Clemson University,
Clemson, South Carolina 29634
Phone: (803)656-4063
BITNET:
JLAMBERT@CLEMSON.EDU
DIALCOM: AGS2118 ▲

SPACES—For Tomorrow's Adults

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Today's young people—tomorrow's adults—face a steady stream of changes that make it difficult for them to imagine the future or, more importantly, to see themselves in that future.

When this disturbing lack of vision is coupled with a lack of self-esteem, many teenagers may engage in destructive behaviors such as substance abuse.

Young people need to be able to see themselves as successful, productive adults in the fast-paced world of the future. To help them learn how, Michigan

4-H Youth staff developed an innovative program—"SPACES: Preparing Kids For A High Tech And Global Future."

Visions Of The Future

"The goal of SPACES," says Leah Cox Hoopfer, Michigan 4-H program leader and director of the project, "is to help young people develop visions of their futures—visions that are important to healthy and successful development into adulthood."

Young people, Hoopfer points out, will be introduced to three life SPACES—"inner space," "outer space," and "shared space." She expects "30,000 kids to participate in the SPACES project statewide, and about 3,500 4-H adult volunteers to be involved in helping these young people

explore future options." Through Inner Space, youths will learn personal coping skills for the present and the future. Outer Space will encourage the exploration of advancing technologies, and the careers and industries that are expanding as we move toward the 21st century. In Shared Space, youth will learn to view the world as a global community where factors such as economics, ecology, and communication technology bring people of the world closer together.

Special videotapes, interactive video programs, "live" space experiences in camps and workshops, and satellite telecommunications with youngsters and leaders around the world are opportunities that will be available to Michigan young people involved in SPACES.

Model Efforts

Four Michigan areas—Kalamazoo, Allegan, Lapeer counties, and the Upper Peninsula—received SPACES grants and are 3-year models for the program. 4-H staff and volunteer leaders are implementing SPACES with help from local businesses for field trips, after-school activities, and career exploration.

SPACES is being made possible by a grant from the W. K. Kellogg Foundation of Battle Creek, Michigan.

For additional information contact:

Leah Hoopfer
SPACES Director and Michigan 4-H Program Leader,
4-H & Youth Development,
Cooperative Extension Service,
Michigan State University,
Berkey Hall,
East Lansing, Michigan 48824
Phone: (517) 355-0180 ▲

Laura K. Probyn
Extension 4-H
Information Officer,
ANR Information
Services,
Michigan State
University, East
Lansing

Michigan 4-H member involves himself in an interactive video program designed to show youth the kinds of careers that will be available to them in the future. SPACES—Michigan 4-H Youth staff's innovative program—has as its goal the introduction of new technologies and ideas that will help youth envision themselves as adults of the 21st century.

Exploring The Human Element

48 Extension Review

Patricia Kovel-Jarboe
Extension Project
Director,
Telecommunications
Development Center,
University of Minnesota,
St. Paul

With major support from the W.K. Kellogg Foundation, the Minnesota Extension Service has established a Telecommunications Development Center (TDC) to encourage the use of new and emerging electronic technologies.

Extension became concerned about the role of technology in its educational programs about 5 years ago. A key question was whether there were program access inequities between rural and urban areas of the state and how new electronic technologies were likely to affect those inequities.

The Kellogg Foundation agreed to provide MES with \$1.89 million over a 5-year period to explore the "human element" in educational technology and to help Extension identify and adopt appropriate technologies.

At first, the TDC emphasized training, development, and financial support of innovators and "early adopters" among the Extension faculty. That emphasis has shifted to applied research and development of small, staff-initiated demonstration projects.

Pilot Projects

In the past 2 years, TDC has conducted 15 pilot projects. While the results have been somewhat uneven, the projects have sparked interest in the potential uses of electronic technologies for Extension education. The following are some examples of the technologies being explored through TDC—

Satellite Video Teleconference—This award-winning program on teen depression and suicide, titled "Fragile Time," reached participants at eight sites. Made available for sale in connection with the program were a 30-minute documentary, the 2-1/2 hours of teleconference proceedings, and a conference handbook.

Interactive Video—A two-way interactive cable system was used to transmit video programming and viewer interaction on four topics related to family stress. Edited videotapes of these programs are being used on other cable systems and in other educational settings.

Selecting And Working With A Lawyer—Targeted to rural families, this was a collaborative effort between Extension and the University of Minnesota Law School. The programs were broadcast over both radio and television; both versions had a call-in segment.

Consumer Information—Two county Extension offices worked together to develop a computerized system for answering common consumer questions.

Telecommunications Network—A coalition of 14 agencies, including educational institutions, health care associations, a county Extension office, a

public television station, and a library system, is working to form an integrated telecommunications system for northeast Minnesota.

Interactive Videodisc—With support from the U.S. Environmental Protection Agency and the U.S. Department of Agriculture, Minnesota Extension has developed an interactive videodisc for use in its pesticide applicator training program.

Bulletin Board Service—This project has developed and implemented a regional electronic bulletin board service that enables rural Minnesota farm and small business operators to use the power of the computer and telecommunications to access Extension software and informational services.

Interactive Television—The goal of this project is to use the interactive television system in central Minnesota to train community leaders.

National Videoconference—Minnesota and Oklahoma produced and delivered a nationwide satellite videoconference on management of stored grain. This program, in combination with a "train the trainer" conference, has provided programming support to Extension specialists in 40 States.

EFNEP Education—Minnesota's Expanded Food and Nutrition Education Program is transferring much of its printed lesson materials to audiocassettes to provide better access for nonreaders and new readers.

Home Landscape—Through a series of videotapes for the home video market on home horticulture and landscaping, Extension is exploring ways to work with commercial producers and distributors while retaining a high degree of control over content.

Family Education—This prototype project involves distribution of audio and videotapes on family life through high-circulation public libraries in metropolitan areas.

Looking To The Future

At least five new projects are planned this year, exploring such areas as satellite delivery, two-way (interactive) television, and videodisc and CD-ROM applications. A series of research reports will describe the findings of the TDC projects in detail and make recommendations based on the TDC's experiences.

The original plan was for TDC to attain financial stability through a combination of grants, legislative and university funding, and income from the sale of products and services. Such a funding base now seems unlikely; the Center's role beyond the expiration of the Kellogg grant in 1990 is not yet clear. The staff will be exploring options for continuing the Center's research agenda. ▲

Tools Of The Tech Trade

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"Power up!"

"Adjust horizontal!"

"Rewind!"

Familiar phrases? Extension professionals are becoming, if not experts, at least knowledgeable about the confusing array of words and functions which apply to the videocassette recorder and computer worlds.

No longer do Extension agents and specialists rely solely on slides, overhead transparencies, publications, and demonstrations to get their educational messages out.

The world of electronic technology has proven to be ready-made for Extension's delivery methods, and when they are combined, everyone benefits—agents, specialists, and most importantly, the clientele.

"Kitchen Update" was a comprehensive program developed by a housing specialist and a food and nutrition specialist-in-charge at North Carolina State University. This program package incorporated the unique advantages of computer software (decision-aided instruction) program and a videotape to enhance an Extension educational thrust.

The program began in 1985 when the two specialists assessed the need for inservice training for home economics agents in various areas of kitchen update such as design principles, space considerations, storage needs, and appliance products. Planning effective training presented a problem. How could 100 agents have the opportunity to see and become familiar with a whole range of new design ideas and products?

Videotape Produced

One of the main training tools developed to solve the problem was an hour-long videotape produced on location in cooperation with several kitchen design and appliance stores. The objective was to provide an overall view of current market trends, design concepts, and products available.

The videotape was designed to be used by clientele as well. There are major urban areas in the state with a wide range of products and services available; those living in the rural counties of North Carolina do not have local access to such information.

Many Loan Requests

The Kitchen Update video has been extremely popular in North Carolina and the Agricultural Communications Visual Library at the university reports a full schedule of loan requests. In addition, it has been requested for purchase or loan by 25 other state Extension organizations and various groups, including home economics classes.

When the videotape was updated in 1987 to incorporate changes in the appliance and kitchen design markets, a new electronic teaching tool was added to the program package—a "Kitchen Design By Computer" software program. This program, developed at North Carolina State University, helps the user learn basic kitchen design principles, space requirements, and safety considerations.

The program enables the client to work with three standard kitchen designs (U-shaped, L-shaped, and Island), and 6 to 7 work centers. The program was designed to run on IBM-compatible computers and has proven to be very user-friendly. In the past, principles of kitchen design have been taught in seminar or workshop settings taking from one to three hours of agent time.

Wide Distribution

Each North Carolina Agricultural Extension office has the kitchen design software program and it has been requested for review by 7 other state Extension organizations plus American Samoa University. In addition, the program was presented at the 1987 Annual Conference of the American Association of Housing Educators in New Mexico, at the 1987 Sunbelt Expo in Georgia, and during the 1988 Extension Southern Region Plan Exchange Meeting in Louisiana.

The success of the total Kitchen Update program and its use of both videotape and computer programs delivery methods has encouraged further use of these combined techniques. Currently being developed at NCSU is a moisture identification computer program and plans are to tape one or two video segments on moisture problems. Also underway is a housing and clothing computer program on care of surfaces.

Decision-aided instruction (computer programs) and videotapes have been welcomed in North Carolina. They save agent time in working with small groups and individuals, allow the program participant to experience a wider range of information, and help clientele find answers to particular problems.

Reaping The Benefits

Extension professionals are change agents who utilize many methods to help clientele make decisions and resolve problems. Videotapes and computer learning programs are just two of the tools available for assisting in the delivery of educational programs. However, to make the maximum use of these methods, they must be developed and made accessible. As North Carolina State University Agricultural Extension Service moves rapidly in this direction, the citizens of the state receive the benefits. ▲

Glenda M. Herman
*Extension Housing
Specialist,
North Carolina State
University,
Raleigh*

(Continued from page 2)

He says we must *all* get going and try something and it is the job of the team leader to create enthusiasm, join in the hands-on work, break down barriers to change, and help rid all minds of the fear of taking a risk.

In doing this he says leaders must create more open climates for innovation. Just because someone holds a job in a particular unit or division this should not exclude him or her from producing ideas applicable to other units. Once the ideas are produced, the leader decides upon the "best," most workable, quality suggestion irrespective of where it came from.

Overcoming Fear And Failure

Fear...we don't talk about it very often. For some reason we find it hard to admit that change makes us fearful...it brings up that old certainty/uncertainty tension. But to become better risk takers we have to face these fears directly...our own and those within those we teach and lead.

Research has identified some of the most paralyzing barriers to change.

These include: *Fear of losing control*. When we can recognize ourselves and encourage others to see that having control is a myth, maybe we can stop worrying about it.

Fear of conflict. As many of you know, if you want to make enemies just try to change something. Change nearly always requires the opening of communication channels to help unfreeze established patterns and ideas. This unfreezing is nearly always accompanied by a sudden increase in the communication of hostility. Rather than fearing it, we must come to accept this type of conflict as a normal part of the change process. If we don't learn ways to work through this productively, we are almost certainly guaranteeing continuation of the status quo.

Fear of rejection. Will my job be abolished? Will my program become obsolete? Will I lose status and power—be rejected in the eyes of others? Dealing with this fear in ourselves and others requires competence and confidence building. It requires helping people to see themselves in much broader, more flexible terms—as multifaceted contributors to teams not necessarily defined by program, discipline, or profession.

Fear of failure. Some of us have to let go of the drive for perfection. We simply can't wait for the

perfect plan, the perfect tool, the perfect organization. And because we can't wait—and because in most areas we lack the certain knowledge to blueprint the perfect solution—we must risk many experiments. Many small, risky experiments will fail and this failure will be compounded into more failure if we don't learn from them and immediately get up and try again.

As leaders and professionals we must rid ourselves of these fears and decide to be confident and build confidence in others. We must learn to shrug off quickly and even laugh about our personal and organizational disappointments and failures. Peters calls this creating and encouraging "small wins" and "fast failures."

Meaning For Extension

So what does all this mean for the Extension professional and the Extension System? I think it means tremendous change in the business we do and the way we do business. We've now been through a period of self-examination, soul-searching, and public and self-critique. We've decided to give up the old false security of simply *doing things right* and added *doing the right things*. We must combine future thinking and innovation with quality delivery. We've agreed that as a system we must position ourselves in the middle of all this uncertainty and take the risks required to demonstrate that we have tremendous untapped potential. Potential, not only to do the right things ourselves, but, in keeping with our educational mission, potential to help others see and take risks to do the right things as well.

We have established nine initiatives in some of the thorniest issue areas on the public agenda today: Alternative Agricultural Opportunities; Building Human Capital; Competitiveness And Profitability Of American Agriculture; Conservation And Management Of Natural Resources; Family And Economic Well-Being; Improving Nutrition, Diet, And Health; Revitalizing Rural America; Water Quality; and Youth At Risk.

Embedded in these broad initiatives are high-priority problems of urgency at the center of the national agenda. As Extension, we must be at the heart and head of the struggle to assist people to cope with the effects of agricultural chemicals on the environment, develop a safe food supply,

search for means to add value to traditional agricultural and forestry products, find new ways to catalyze socio-economic development in rural communities, build and sustain a profitable and environmentally sound agricultural base for the future, and provide child and youth development programs worthy of an organization with an unparalleled national network and 75 years of successes and failures. These are problems of urgency for which we have a research base with which to connect and from which to build. This is an agenda that can be addressed by a cadre of professionals that can reteam and when necessary retool. And these are the problems we are mandated by our institutions and our clients to address.

Yes, this 75th Anniversary year is not the time for Extension to merely talk about creating change—how we will do something in the future. We must start now, with raging impatience, to tackle a more risky, action-packed agenda. It will certainly result in some wins and some losses.

We Will Act

And in acting—we plan to forget our losses, learn from them, and build on our wins. We intend to face up to conflict and see it as a natural part of the creative process. We have already opened communication channels to new audiences and new organizations in the public and private sector and we don't intend to leave our traditional clientele behind. We want to work with our traditional clientele to shed the possibility of return to the certainty myth and join in the reasonable adventure.

We are encouraging what Peters calls *skunkworks*...with innovative testing of model programs. We are restructuring for improved teamwork—searching out and using talents regardless of disciplinary training or programmatic location. And we are committed to hard, *intelligent* work. Some of us may have gotten a little lazy in serving only the easy-to-reach-and-teach clientele...a little lazy in really listening to what our clients see as the priority issues today...a little lazy in considering changing our office hours when many of our clients can't be reached eight-to-five, Monday through Friday...a little lazy in neglecting to invest the energy required to become early users and understanders of the new technology that is rapidly changing the way Extension will do business in the future...and, finally, a little lazy in seeing the massive global and demographic changes already on the move.

This hard, intelligent work should be no stranger to most of us in Extension. It is the ethic cornerstone of what helped bring American agriculture to its envied and imitated world position today. It is an American agriculture and rural way of life that spawned most of us in this room.

But *today* isn't tomorrow, or next week, or next year. And even if unpopular with some, we must move quickly to risk going beyond the tried and true—the *better safe* and *it ain't broke* view. The future *is* uncertainty. We simply can't sit and guard a single basket of aging eggs, if we hope to enjoy any flirtation with success. Unless, we think we can market the eggs to those preferring the 30-year-old variety.

As Extension professionals we must begin optimistically carving out a whole network of still uncharted roads. Roads that will lead to a more dynamic, risk-seeking, creative, flexible, action-oriented organization. And we expect in all that digging and earth moving and rearranging that we will probably also change ourselves as well. With a bit more risk taking, I think many Extension professionals will learn to meet the challenge of change head-on. They will reap the exhilarating rewards of that success and eliminate the possibility of paralysis because of occasional failures.

I, for one, think there has never been a more exciting time to be an Extension professional...to be able to say, on this our 75th Anniversary, we are investing in America's future in ways never dreamed of before.

In closing, let me share the sage advice of an anonymous Spanish bullfighter:

"To fight a bull when you are not scared is nothing. And to not fight a bull when you are scared is nothing. But to fight a bull when you *are* scared...that is *something!*" ▲

Remarks by Myron D. Johnsrud, Administrator, Extension Service, U.S. Department of Agriculture, 1988 National Distinguished Service Ruby Award Recipient, Epsilon Sigma Phi, National Honorary Extension Fraternity, at the NASULGC Annual Conference, Dallas, Texas, on November 14, 1988.

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